THE RUBBER AGE AND TIRE NEWS

SEPT. 10, 1918 VOL. III. NO. 11

Member of the Associated Business Papers, Inc.

INDEX TO CONTENTS

	PAGE
War-Time Employment of Women in Places of Men	455
Determination of Permeability of Balloon Fabrics	458
Editorials	461
News of Importance to the Trade	462
Items of Interest to Rubber Men	463
News of the Rubber Metropolis	463
American Rubber Patents	464
TIRE NEWS:	
Standardization of Tires and Rims	465
Big Cut in Automobile Production	468
Notes of Interest to Tire Men	468
News of the Tire Trade	469
MARKETS:	
Manufactured Rubber Goods	470
Cotton, Yarn and Fabric	470
Chemicals and Compounding Materials	471
Crude Rubber	472
Scrap Rubber	472

THE GARDNER-MOFFAT COMPANY, Inc., *Publishers*

120 WEST 32D STREET, NEW YORK

Room 310 Evening Star Building, Washington D. C.

SUBSCRIPTION PRICE: ONE DOLLAR PER YEAR, SINGLE COPIES TEN CENTS. CANADA: TWO DOLLARS A YEAR. FOREIGN: THREE DOLLARS A YEAR.

COPYRIGHT, 1918, BY THE GARDNER - MOFFAT COMPANY, INC., PUBLISHERS.
ISSUED ON THE TENTH AND TWENTY-FIFTH OF EACH MONTH. FORMS CLOSE FIVE DAYS PREVIOUSLY. ENTERED AS SECOND-CLASS MATTER MARCH 26, 1917, AT THE POST OFFICE AT NEW YORK, N. Y., UNDER THE ACT OF MARCH 3, 1879.

TRENTON N.J., U.S.A. **ESSEX RUBBER COMPANY, Inc.** TRENTON N.J., U.S.A.

"SHED-WET" SOLES
FIBRE-RUBBER SOLES
"ESSEX" RUBBER HEELS

MOLDED SPECIALTIES

Trade Mark

AUTOMOBILE ACCESSORIES

INNER TUBES, CEMENTS, ETC.

MOLDED RUBBER GOODS

SOMETHING OF INTEREST IF YOU WILL WRITE US REGARDING

ACCELERATORS
MAGNESIA

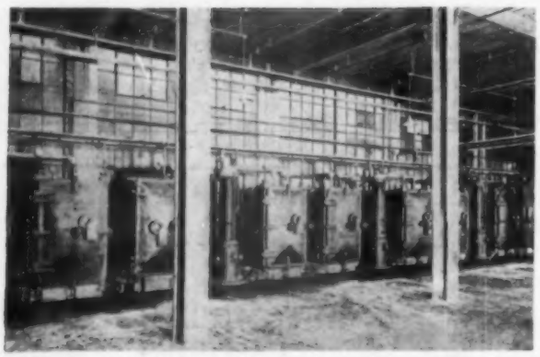
1890 L.H.B.CO.

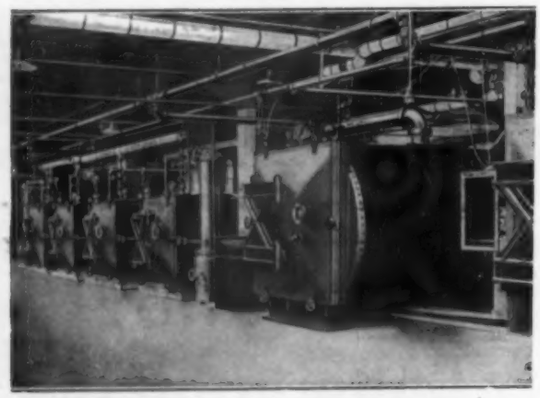
CARBON BLACK
WHITING

L. H. BUTCHER COMPANY, Incorporated
ESTABLISHED 1890

NEW YORK LOS ANGELES SAN FRANCISCO

DEVINE





A Few Typical Installations of

Devine High Efficiency Vacuum Chamber Dryers

For drying

Sheet Rubber as it comes from the washer

—THE ADVANTAGES—

1. There is a rapid, thorough and uniform drying at a low temperature independent of climatic conditions.
2. There is no oxidation and consequent loss during the drying process.
3. The rubber has greater elasticity owing to the absence of high temperature and oxygen in vacuum.
4. The rubber is perfectly dried without drawing the resins to the surface.
5. The drying period is reduced to from one and one-half to three hours, according to the grade of rubber.
6. The consumption of steam for power and drying purposes is reduced to a minimum, with a maximum utilization of heat units in the drying process.
7. No waste of fuel.
8. Greater economy in factory space
9. Greater saving in quantity of crude rubber to be carried in stock.
10. Elimination of fire hazard, and
11. A great saving in capital tied up in buildings and raw rubber stock which can be more profitably employed to develop and expand the market for manufactured products.

A DEVINE VACUUM CHAMBER DRYER of a given capacity occupies about one-eighth of the floor space required by the old-fashioned hot-air or dry room of the same capacity. The old method requires the stock to be hung in the loft from one week to a month, according to atmospheric conditions, while in a DEVINE VACUUM CHAMBER DRYER the sheet rubber is dried in a maximum of three hours.

J. P. DEVINE COMPANY

The World's Premier Vacuum Specialists

NEW YORK: 42nd Street Bldg. BUFFALO, N. Y., 1250 Clinton Street
Jas. Livingston, Ltd., LONDON

DRYERS

THE RUBBER AGE AND TIRE NEWS

War-Time Employment of Women in Place of Men

By J. C. Long

The authorities reported Jan. 1, 1918, that up to that date the direct replacement of men by women in English industry numbered 1,442,000 employes. This shows what we may expect when we get into the war as deeply as England now has gone. Our population nearly trebles that of England, Scotland and Wales, and if we have to exert ourselves proportionately in war work to the extent found necessary in that island it will mean that we shall have to find more than four million women to take the place of men summoned to war.

The figures just given are far exceeded by the estimates of Frederic C. Walcott, assistant to Herbert C. Hoover, who writes: "With an army of 5,000,000 in the field . . . it is a foregone conclusion that at least 7,000,000 women must enter the industrial field to take the vacant places, or we shall fall short of our program in winning the war." And telling of what England has done, he gives among others this example: "A battleship cruiser, built almost entirely by women was recently launched in the River Clyde, and in one shipyard there are now 20,000 women at work where there were but 200 before the war."

GIRLS' DINING ROOM AT THE FIRESTONE FACTORY IN AKRON

How Not to Manage Women Workers

We may profit by the mistakes made in England and Canada. Many mistakes have been made in both these lands. It will be seen what some of these errors were if we take such accounts as that given by Mrs. Winnifred Brooke Irvine as recently published in a leading periodical. This woman took employment in a Toronto munition factory. She tells of the severe labor involved in handling eighty pound shell cases, resulting in incapacitating her from heart strain. This woman was employed on a night shift and no adequate provision was made for the comfort and safety of these night workers. For example, the pillows on a cot in the rest room were grimy. In the cloak room there were long troughs filled with icy water in which the women with the coarse yellow soap furnished might wash up. The paper towels were a wise sanitary precaution. In this factory an "irritable foreman often

made the girls cry when he scolded them." The writer is not recording her experience in a faultfinding mood. On the contrary, she seems to be unconscious of the rough barbarity that appeared to characterize the management of this concern. The furniture of the rest room consisted of

FIRESTONE GIRLS' DRAMATIC CLUB

" a wooden table and a few, very few, kitchen chairs." On the wall were some pegs for hats and wraps. The new worker was abruptly introduced to the machine that she was to operate. She was taken directly to " a 15-foot hydraulic machine " as she calls it and shown by the workman how to work it. After half an hour the foreman turned away with the words, " Well, I guess you can manage alone now." The woman describes her own reaction to the situation when she says, " I felt deathly sick, and more terified than words could express at being left alone with this hideous monster, which might blow up for all I knew." However, the factory had a kindly matron and when the worker was put at running a great freight elevator she was told that she might sit down on a box when not working, but was advised " Don't let the Superintendent see you." The situation was somewhat relieved by a Y. W. C. A. cafeteria run by voluntary help on four-hour shifts where good food could be had at cheap prices.

Later, this same worker was employed in a fuse factory where she said it was a relief " to be treated with civility after the harsh rudeness of the men in the shell factory." In this latter factory the girls wore caps and aprons of khaki and our worker found " the fuses mercifully light after the 80 lb. shells."

These things are mentioned in order to show how not to manage female labor. There seems to have been no deliberate unkindness in this case but simply brutal and ignorant inefficiency, resulting in a huge labor turnover and the destruction of the health of many of the workers.

America's Problem

Before considering an example of a radically different sort of management, we had best consider some of the fundamental elements of the problem involved in the substitution of female for male labor in the factories of this country.

What work can women perform? It is admitted that women are naturally somewhat quicker than men, but possessed of less muscular strength. In work requiring deftness and precision women may readily take the places of men workers. But complicated work and heavy manual work has, as a rule, been found unsuitable for women. Where it is necessary to use women on heavy work, the mechanical aids of the factory, such as hoists and conveyors, should receive special attention so as to eliminate all unnecessary lifting.

The supply of a sufficient number of women workers is a problem of magnitude in many localities. They may be recruited to a degree from household employment and from women employed in non-essential industries. But England's experience shows that this supply will not suffice, for there it has been found necessary to increase the number of women in gainful occupations by 44 per cent. As we progress with our war work we shall have to bring in many women who have never been gainfully employed. These will be largely the sisters, wives and even mothers of the men in our military service. They will be swayed in part by patriotic motives and in part by economic necessity. The rising price of commodities and the absence from home of the former breadwinners will combine to force women into industry. Many agencies can be employed to find and classify those women who may be available for employment. Local organizations such as chambers of commerce and manufacturers' organizations may register lists of women who may be obtained to take the place of men. We have many other agencies which may be employed in the same way, such as the churches, women's clubs, the Y. W. C. A., the Catholic societies, etc.

The selection of women workers involves much the same problems as the selection of male workers. As already suggested it will be wise in so far as possible to make classified lists of women who may be available for war-time industry. The moral and physical qualifications will be indicated in these lists, as also the mental equipment. The work of selection may in this way be greatly facilitated and the manufacturer seeking female labor will thus have his task greatly lessened. Local boards may make up these lists in coperation with the agencies already alluded to.

Training Women Workers

The training of women workers presents many problems. We have seen above how the absence of preliminary training of women workers in the Toronto shell facory was disastrous. Some factories have a crew of instructors organized from the fastest women workers to train women applicants for employment. Where there have previously been no women workers in a department, competent women are secured and trained by men workers to serve as instructors. The operation to be performed is carefully analyzed and the best and quickest way of performing the same ascertained. The instructor takes a woman who has been hired and stays by her until she can do the work exactly as taught. These women instructors are selected for ability to explain things clearly and for pleasing personality, tact, sympathy, and consideration for the rights of others.

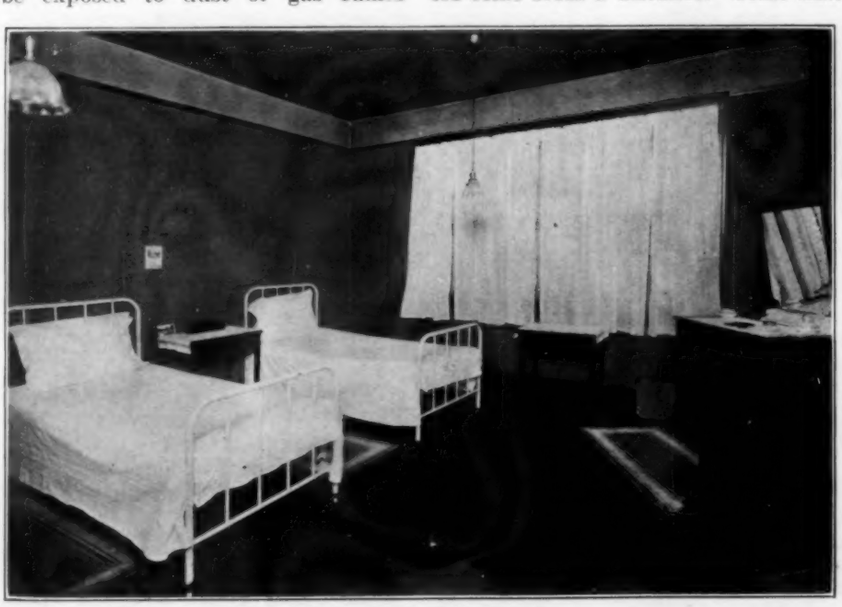
As to wages and hours of work, it seems to be generally agreed that pay should be based on performance and that piece-work with a guaranteed

minimum wage is most satisfactory.

In this country most manufacturers desire to avoid night work, overtime, Sunday work and a half day Saturday for women workers. Many find it best to allow 45 minutes for the lunch period and a recess time of from 10 to 20 minutes forenoon and afternoon.

Working conditions as a rule for women workers involve special consideration for the health and welfare of the employe. Where possible a nurse is employed as matron to adequately observe the condition of the female employes and look for signs of strain, nerve tension, and fatigue.

A factory may select the best women and pay the best wage, but if conditions are not right it will be found impossible to hold those employed, as women are more sensitve to working conditions than men. The working rooms should be generously lighted to secure speed and accuracy as well as contentment. Good ventilation is requred to avoid languor and headache. The temperature should be constant and adapted to the strenuousness of the labor. The question of position when at work is especially important for women. Whenever possible the woman worker should be seated and the chair or stool such as to promote erectness of posture. If compelled to stand, the worker should have a high stool which will permit at times of a semi-leaning position. Everything needed should be within easy reach to secure both comfort and speed. Labor saving devices to avoid as far as possible lifting and handling, and every safety device procurable are desirable. As far as possible we should avoid putting women at dangerous tasks or where they will be exposed to dust or gas fumes



DOUBLE ROOM IN THE GOODRICH GIRLS' DORMITORY

Some manufacturers think that women can be better handled under foremen, but the drift of opinion seems now to be toward the employment of forewomen as more satisfactory. Men are usually forbidden to smoke in rooms where women are employed and in some cases it has been found helpful to allow and even encourage women to sing at work. Great importance is attached to the matter of keeping the premises neat and clean. The street entrances should be properly policed as women workers come and leave to prevent annoyance from toughs and loafers.

PARLOR IN THE GOODRICH GIRLS' DORMITORY

Living Conditions

Living conditions should be looked after where many of the women workers come from a distance. Some find boarding houses under company management where accommodations are furnished women workers at cost a wise provision. Women workers will not be contented unless they have congenial companionship. They must be allowed to group themselves along lines of social affinity and should be allowed to manage their own clubs and meet the incidental expense, but it is important that the company supply competent managers to run the boarding houses or dormitories and to organize and direct in a general way the social activities of the female employes. Amusements are considered very important and bowling clubs, dancing, tennis, etc., should be promoted. All this, of course, requires the services of a social secretary. Y. W. C. A. cantonments, community kitchens and clubs for women war workers are found in many localities.

A concrete instance of how the women labor problem was met is found in the case of the Recording and Computing Sales Co. of Dayton, O. That concern now employs 8,600, of whom more than 5,000 are women. The company has a large quantity of Government orders ranging from optical instruments to munition fuses. Charles U. Carpenter of that company states that practically all of the mechanical operations, assembling, and inspection are performed by women. The machinery used is of every variety, hydraulic presses, punch presses, milling machines of all types, hand turret screw machines, automatic screw machines, thread millers, drill presses, and special machinery designed and built by the company.

(To be continued)

Determination of Permeability of Balloon Fabrics

By Junius David Edwards*

Volume-Loss Method

Because of the comparative simplicity of the volume-loss method it is important to determine the precision and reliability of results obtained with that method. In the discussion of the theory of the permeability process it was stated that the penetration of the fabric by the hydrogen was accompanied by a simultaneous passage of air through the fabric in the opposite direction. For this reason the volume loss determined is not the hydrogen which has escaped but that volume less the volume of air passing through the fabric into the hydrogen chamber. It is of interest to know what the numerical relation between results determined by the two methods is; also, if there is any great variation in the relative rates of penetration of rubber films by hydrogen and air, it is a fact of importance.

(*a*) *Apparatus.*—For investigating the volume-loss method, the apparatus shown in Fig. 7 was designed. It consists of a cell similar to that shown in Fig. 4 and identical with the cell of that type having an area of 100 cm.[1] except that the hydrogen chamber is considerably larger (volume = 275 cm.[3])

The large volume of the hydrogen chamber prevents any considerable reduction of the partial pressure of the hydrogen through the small volumes of air which diffuse inward. Attached to the hydrogen chamber is a graduated measuring tube which is connected by the orifice shown near the top with a constant-pressure flask. As hydrogen escapes through the fabric, water from the constant-pressure flask drops into the burette through the orifice to take its place. The decrease in volume of the confined gas is determined by the increase of volume of water in the burette. The total volume of the gas space is known and corrections are applied for the changes in temperature and pressure which may occur during the test. Since the fabric changes temperature with the surroundings, a further correction is necessary for the change of permeability of the fabric with change of temperature.

In operation, the fabric was clamped tightly between the well-greased flanges of the cell. The gas chamber was then tested for leaks by placing it under a small pressure of air. If it was airtight, the air in the gas chamber and burette were swept out with hydrogen, and the chamber left filled with hydrogen under a pressure of 30 mm. of water. The decrease in gas volume was then noted at 30-minute intervals. A current of air was passed through the upper chamber during the period of test.

This apparatus is similar in principle to the apparatus of Lebaudy, Sabbatier, and others, and combines their best features. It was developed primarily for experimental purposes.

(*b*) *Results of Tests.*—The results obtained with this apparatus, using a series of fabrics from three different manufacturers, are shown in Table 2. For purposes of comparison the permeabilities of the same fabrics as determined with the apparatus shown in Fig. 3 are included.

The conclusions drawn from these results and the experience in the use of this and similar apparatus may be summarized as follows:

TABLE 2.—APPARENT PERMEABILITY AS DETERMINED BY THE VOLUME-LOSS METHOD

Fabric No.	Apparent permeability at 25° C by volume-loss method, liters per square meter per 24 hours	Permeability at 25° C by penetration method, liters per square meter per 24 hours	Ratio of permeabilities
22152	10.9	15.8	0.69
22151	11.0	15.8	.70
22150	12.0	17.9	.67
10449	10.7	14.5	.74
10650	12.4	17.1	.72
10651	7.2	11.0	.65
10652	14.4	20.1	.72
22795	9.8	14.4	.68
22496	9.9	15.0	.66
			Av. .69

With this size of cell the actual volume of hydrogen escaping per hour is usually small and the errors of measurement relatively large. The results are not very concordant and the precision secured is low compared with the standard apparatus.

Great care must be taken to secure a gas-tight joint between the fabric and the cell in order to prevent any leakage other than through the fabric. A small leak in the hydrogen chamber of apparatus of the penetration type is unimportant, but with the volume-loss method it is fatal to accuracy. Even if this joint is gas-tight, hydrogen may escape from the cell by leaking out between the plies of the fabric. Excessive permeabilities indicated in several cases were traced to this source.[15] To guard against this, if possible, the edges of the fabric were coated with shellac. Where a high permeability is indicated, the results are usually open to the suspicion of being influenced by a leak.

(*c*) *Relation of Volume-Loss to Penetration Method.*—To determine the theoretical relation between the volume-loss and penetration methods it is necessary to know the relative permeability of balloon fabrics to air and to hydrogen.

According to the figures given by Graham (p. 5) the relative rates of penetration of rubber by nitrogen, oxygen, and hydrogen are 1, 2.56, and 5.5. Since the permeability is proportional to the partial pressure, the relative permeability to hydrogen and air would be as

$$\frac{5.5}{(0.79 \times 1 + 0.21 \times 2.56)}$$

which is as 4.1 is to 1. These figures, of course, will vary with different rubber compounds and different experimental conditions.

The rates at which hydrogen and air penetrate a balloon fabric have been determined simultaneously by using two interferometers. With the standard cell (Fig. 4) the hydrogen passing into the air stream was determined in the usual manner. The air passing into the hydrogen in the other chamber of the cell was determined at the same time in another interferometer by comparison with hydrogen from the same source which had not passed through the cell. The calibration of the interferometer was somewhat in doubt in this latter case owing to the fact that the "air" in the hydrogen may have a different ratio of oxygen to nitrogen[16] than in atmospheric air (see p. 5), but if the oxygen content was as high as 40 per cent, the readings would be approximately only 3 per cent low. This difference falls within the rather large experimental uncertainty in these tests; accordingly no correction has been made. This was allowable since the ratio to be determined is not a constant and the results are sufficiently concordant for present purposes.

Table 3 shows the results for four different fabrics. The average ratio of hydrogen to air is about 3.8 to 1. This ratio seems to be approximately constant for rubber-coated balloon

---

* Associate Chemist, Bureau of Standards, in Technologic Paper of the Bureau of Standards, No. 113. Continued from the August 25 issue of THE RUBBER AGE AND TIRE NEWS.

[15] Fabric No. 10653 consistently permitted gas to leak between the plies of the fabric and out at the edge of the test piece.

[16] "Air" after passing through a rubber film usually contains more than 21 per cent oxygen because of the higher permeability of rubber to oxygen than to nitrogen.

fabrics of the type now in use. This would indicate that the volume-loss method should give results which are approximately 74 per cent $\left(\frac{2.8}{3.8}\right)$ of the penetration method, since while 3.8 liters of hydrogen are escaping through the fabric, 1 liter of air passes into the gas chamber, making a net loss of 2.8 liters. According to Graham's figures, which were determined under very different experimental conditions and with different rubber compounds, the volume loss would be $\left(\frac{3.1}{4.1}\right)$ or 76 per cent[17] of the permeability determined by the penetration method; this ratio is very close to the one found by the author. The volume-loss results given in the table were on the average 69 per cent of the values secured with the same fabrics by the penetration method. The difference between 69 per cent and the value (74 per cent) just calculated may be attributed to the fact that the hydrogen was saturated with water vapor in the volume-loss experiments and was used dry in the other method. It was shown on page 16 that the apparent permeability was 4 to 5 per cent lower when moist gas was used.

TABLE 3.—THE PERMEABILITY OF BALLOON FABRICS TO HYDROGEN AND AIR

Fabric No.	Permeability to hydrogen, liters per square meter per 24 hours	Permeability to air, liters per square meter per 24 hours	Ratio hydrogen to air rate
10652	29.5	8.4	3.5
26995	17.6	4.4	4.0
26293	14.2	3.8	3.7
24753	5.4	1.4	3.9
			Av. 3.8

(*d*) *Absorption of Hydrogen by Rubber.*—In connection with the tests of the apparatus shown in Fig. 7 a series of determinations were made of the rate at which hydrogen is absorbed by the rubber in a balloon fabric. The tests were made by placing a fabric in the apparatus as for a determination of permeability, and then cutting slits in the fabric so as to connect both chambers of the cell. Both chambers were then filled with hydrogen, closed, and the rate at which the hydrogen was absorbed was measured in the usual way. The hydrogen absorbed was calculated in terms of liters per square meter per 24 hours. The results are shown in Table 4. A test on the cloth without the rubber coating showed no absorption of hydrogen, thus proving what was evident—that the hydrogen was absorbed by the rubber and not by the cloth.

These experiments indicate that saturation of the rubber with hydrogen is practically complete in 60 to 90 minutes. Kayser[18] also found, using another method, that absorption was complete in about 1 hour; no further absorption was noted by him in experiments lasting 3 to 5 days. In the determinations by the volume-loss method shown in Table 2 the reading at the end of the first 30-minute period was usually about a liter higher than the average of the 8 to 10 readings taken. Although the data are not very complete, it seems evident that a higher initial reading might be partly due to this absorption of hydrogen by the rubber. It does not, however, make a significant difference in the results because of the rather large accidental errors involved in the volume-loss measurements.

TABLE 4.—ABSORPTION OF HYDROGEN BY RUBBER-COATED BALLOON FABRIC

Fabric No.	Permeability, liters per square meter per 24 hours	Rate of absorption of hydrogen, liters per square meter per 24 hours						Milligrams of hydrogen absorbed per gram, rubber compound
		First 30 minutes	Second 30 minutes	Third 30 minutes	Fourth 30 minutes	Fifth 30 minutes	Sixth 30 minutes	
22496	15.0	4.3	.....	1.4	0.0	0.0	.....	0.08
22150	17.9	3.4	1.0	.....	.5	.0	0.0	.09
22151	15.8	1.0	1.9	.5	.0	.0	.0	.04
22152	15.8	2.4	1.0	.....	.0	.0	.....	.04
10651	11.0	.0	.....	.0	.....	.....	.....	.....
10652	20.1	.....	1.9	.....	2.4	.....	.0	.08

(*e*) *Conclusions.*—It may be concluded from the results of these tests and many others unrecorded and from the experience of other experimenters as noted in the literature that all volume-loss methods so far developed are inferior to the penetration method both in precision and reliability. The permeability according to the volume-loss method is approximately 70 per cent of the permeability by the penetration method.

Standard Test

The permeability test adopted as standard by the Bureau of Standards may be briefly described as follows: The fabric to be tested is held in a permeability cell of the size and form shown in Fig. 4, or its equivalent, and is maintained during the period of test at a temperature of 25 deg. C. A current of pure dry hydrogen is passed over one side of the fabric under a pressure of 30 mm. of water above the pressure on the other side of the fabric. Dry air, at approximately atmospheric pressure, is passed at a constant rate through the other chamber of the cell and the hydrogen passing through the fabric into the air is determined by means of a gas interferometer and meter. The hydrogen may also be determined by combustion and weighing as water. If the interferometer is used, a reading is taken every half hour until a constant permeability is indicated. If the combustion method is used, the fabric should remain in the apparatus in contact with the atmosphere of pure hydrogen for a period of one hour before beginning a test.

The permeability is calculated in liters of dry hydrogen escaping per square meter of fabric per 24 hours, the volume of hydrogen being corrected to the standard conditions of 0 deg. C. and 760 mm. pressure of mercury.

Operating Directions and Calculations

In the preceding sections many of the details of operation such as pressure, temperature, etc., having been discussed at length. It may be well to call attention also to certain other points which must be taken account of in order to secure concordant results.

To begin with, the fabric should be firmly fastened in the cell and the area of fabric exposed to the hydrogen should be definitely known. If the faces of the cell are not exactly plane or if they are insufficiently lubricated or if the cell is not bolted together tightly, hydrogen may leak past the edge of the gas chamber and increase the area of the exposed fabric. The results will accordingly be too high and will probably be erratic.

The air current should be maintained as uniform as possible. The air can be forced through under low pressure or it may be drawn through by slightly reducing the pressure at the outlet with a water pump or other vacuum pump. To aid in maintaining a uniform pressure, a water-sealed, gas-pressure regulator may be used. A long piece of capillary glass tubing inserted in the air line also tends to reduce fluctuations in the rate of air flow.

The hydrogen should be passed through the cell rapidly at the start of a test in order to sweep out the air as quickly as possible. When the air is removed the hydrogen needs be passed only slowly in order to sweep out the air which diffuses through the fabric.

[17] Austerweil (Die angewandte Chemie in der Luftfahrt, p. 58), by erroneous reasoning, arrives at the figures 81 per cent for this relation.

[18] Wied, Annalen der Phys. und Chem., 43, p. 547; 1891.

The permeability is calculated from the following equation:

$$P = \frac{S \times F \times H}{A}$$

P = permeability in liters per square meter per 24 hours.
S = rate of air passage, liters per 24 hours.
A = area of fabric in square meters.
F = factor by which indicated air rate must be multiplied to reduce the gas volume from the condition of saturation at the temperature and pressure in the meter to the volume when dry and at 0 deg. C and 760 mm pressure.
H = percentage of hydrogen in the air stream.

The factor F is calculated as follows:

$$F = \frac{p - p_w}{760} \times \frac{273}{t + 273}$$

p = barometric pressure plus pressure above atmospheric in the meter.
t = temperature of meter.
p_w = vapor pressure of water at temperature t.

A table giving the value of F for different temperatures and pressures should be prepared if many tests are to be made.

FIG. NO. 7. VOLUME LOSS APPARATUS

Most of the considerations discussed in section 5 apply equally well to a method in which the hydrogen is determined by combustion with subsequent weighing as water instead of by means of an interferometer. The advantages the interferometer offers in point of speed and precision have already been pointed out. If a suitable interferometer is not available, however, the hydrogen may be determined by combustion; in fact, this is the customary method in commercial use.

To secure correct results by combustion, it is necessary that the air and hydrogen from the cell be perfectly dried; that the hydrogen be completely burned; that the water formed be completely absorbed and its weight correctly determined. This can be done with sufficient accuracy if the proper precautions are taken.

The efficiency of drying with any apparatus and drying agent should be tested by blank runs. It is desirable to use two absorption tubes in series in order to determine the efficiency of drying in the first tube. When the second drying tube begins to absorb increasing amounts of moisture, the first tube should be refilled.

The combustion of the hydrogen may be accomplished in a number of ways, such as by passing over heated copper oxide, platinized asbestos, platinized quartz, palladium black, glowing platinum wires, etc. Complete combustion can be secured by any of these catalysts if the proper temperature is employed and the gas is not passed through the combustion tube too rapidly. In any case it is well to determine by experiment that the combustion is complete under the conditions of use. It is important that the rate of passage of the air be not too rapid to prevent efficient drying and complete combustion.

Since the amount of water collected is usually small, every precaution should be taken in weighing the glass absorption tubes. It is desirable that a counterpoise of as nearly the same size and shape as the absorption tube be used in weighing. The absorption tubes should be wiped with a damp cloth and hung in the balance case or a suitable container to permit them to assume the temperature of the balance before weighing. Rubbing the glass while dry is likely to produce electrostatic charges on the glass which prevent accurate weighing.

Accuracy of Methods

The accuracy with which the permeability of a fabric can be determined depends upon the accuracy with which the various factors of the test, such as concentration of hydrogen, etc., can be determined, and is closely associated with the question of uniformity of fabric. Some fabrics show very close agreement on duplicate tests and give evidence of being very uniform. Fabric No. 24579 is a good example of this. Tests on eight different test pieces of this fabric showed permeabilities between 8.6 and 8.9 liters. Experience with this fabric indicates that a great many of the differences noted between duplicate tests on other fabrics are caused by real variations in the permeability of the fabric and not by unobserved errors of testing. If the fabric contains "pinholes," the variations in permeability of test pieces may be very large because it is unlikely that the small holes will be uniformly distributed and be uniform in size. One sample which showed "pinholes" gave tests ranging from 14.5 to 43.5 liters. In general, duplicate tests on good fabrics show an agreement within approximately 1 liter in the range of 10 to 20 liters.

With the standard cell having an area of 250 cm.^{2} an interferometer giving the concentration of hydrogen to 0.01 per cent and a 1/20 cubic foot meter graduated in thousandths of a cubic foot and read to ten thousandths of a cubic foot, it is possible to keep the probable experimental errors below 5 per cent. Under routine testing conditions the accuracy may vary from 5 to 10 per cent. Greater variations than this in the uniformity of the fabric are commonly met with. The precision attained—that is, the agreement between successive tests on the same test piece—is somewhat greater than the absolute accuracy attained.

If the combustion method is used, about the same accuracy can be secured if the proper precautions to secure complete drying, combustion, and absorption are taken. Because of the length of time necessary for a test, check tests are not usually run, and furthermore it is necessary to obtain the average permeability over a period of several hours unless a very large cell is used.

Summary

The various methods for determining the permeability of balloon fabrics to hydrogen are described in this paper; the precise and rapid method used at the Bureau of Standards is described in detail. The phenomenon of the passage of gases through rubber by solution in the rubber is discussed in relation to testing methods. Data are given to show the effect upon the apparent permeability of different experimental conditions such as temperature, pressure, humidity of the gas, duration of test, etc. A knowledge of the effect of these factors enables one to compare results of tests made under different conditions. It has been shown that methods which depend upon the loss of volume of hydrogen confined by a sample of the fabric give results which are about 70 per cent of those obtained by the standard method which measures the volume of hydrogen penetrating the fabric. This is due to the mutual permeability of the fabric to air and hydrogen.

W. D. MOFFAT
PRESIDENT
W. I. SEAMAN
TREASURER
H. I. BOWNE
GENERAL MANAGER
GEORGE NEWBOLD
BUSINESS MANAGER

THE RUBBER AGE AND TIRE NEWS

H. M. WILLIAMS
EDITOR
W. M. MILNER
ASSOCIATE EDITOR
H. B. SEYMOUR
ADVERTISING MANAGER

Vol. III | September 10, 1918 | No. 11

THE expiration of the sixty days' preliminary curtailment of tire production requested by the War Industries Board is rapidly approaching and no indication as to future plans of curtailment is as yet forthcoming. One of the most objectionable features of the first restrictive measures, the failure to give advance notification, threatens to be repeated.

The request for production curtailment, which is now holding many tire factories at a standstill, came " like a bolt out of the blue " and resulted in much loss that probably could have been avoided had manufacturers received a few weeks' notice of the Government's intentions and been enabled to plan accordingly.

An excuse could be offered for the suddenness of the War Industries Board's application of this first tire production curtailment. The War Trade Board, through the War Service Committee of the Rubber Industry of the U. S. A., on May 10, had warned the industry of the necessity of reducing its consumption of crude rubber during a period of ninety days. Some manufacturers are said to have heeded this warning, but the fact remains that, far from falling off, the consumption of crude rubber increased in volume. Naturally this made the Government feel unkindly towards the whole industry and may explain the drastic curtailment " request " which was put into force on Aug. 1, without even twenty-four hours' notice.

But the same excuse does not seem applicable at this time now that tire manufacturers are scrupulously observing the War Industries Board's " request," regardless of the effect it is having upon their organizations.

The present preliminary curtailment period comes to an end on Sept. 30, a date that is less than three weeks off, and tire manufacturers know nothing of what the future has in reserve for them in respect to compulsory production curtailment. Will the present rate of restriction be continued in force; will manufacturers be allowed to make more or will they be constrained to make less tires than they are now building? No one knows. Some believe production will be cut down by an order even more drastic than the present " request "; others are more hopeful and expect to see matters become easier. But no one is sure of what will happen.

This state of affairs is unfortunate. Tire manufacturers, in common with all other manufacturers using large quantities of costly raw materials, have to know some time in advance what they are going to do; they have to make up schedules to coordinate the efforts of the several departments of their organizations.

No practical purchasing or production schedules can be planned under present conditions and manufacturers have to wait.

In the meantime organizations and trade, that were built up with great pains and at large cost, are being injured because of the uncertainty of the future.

All tire manufacturers are willing to make the utmost sacrifices to win the war, but the belief is that much of the loss due to the delay in getting indications of the Government's intentions is unnecessary and could be avoided by doing away with the excess of secrecy that now surrounds the War Industries Board's activities and intentions.

Women Workers

Increasing demands for women workers in virtually all parts of the country were manifested during August. Women in rubber factories and in tire repair shops are no longer a novelty, and we are becoming accustomed to seeing them at all ages, from sixteen to sixty, dressed in overalls of blue or of khaki, doing work of various kinds that formerly were thought possible only for men.

We must not forget that few of these women have had any previous factory training and that very few indeed have any marked tendencies that would make them like their new occupations. There are exceptions, of course, just as there are occasional men milliners and dressmakers, but the average woman is not mechanically inclined any more than the average man takes kindly to knitting socks or embroidering doilies. For the present we are confronted with the proposition of training women for many kinds of work in rubber factories and teaching them to like their new occupations well enough to become steady workers.

The selection of women workers, their training and the creating of a suitable factory atmosphere requires skill and a special aptitude for the work. Carelessness and impatience can easily be made very costly to employers in many ways. It requires much tact to both interest and instruct girls in an entirely new line of work and in unfamiliar surroundings so as to make them valuable producers and to hold them steadily on the work. Without some real interest in the work and the factory it is impossible to prevent a large labor turnover in these days when, it seems, there are two jobs open to every worker.

In the leading article in this issue of THE RUBBER AGE AND TIRE NEWS will be found helpful suggestions to employers of women workers.

News of Importance to the Trade

Government Fixes Crude Rubber Prices—Allocation Certificates for Para Can Be Exchanged for Certificates for Rubber from Other Sources—Sulphur Production—Telephone Rubber Replacable—Other News

Government Crude Rubber Valuations

The following valuations placed by the United States Government as their option prices on the various grades of crude rubber, including balata, gutta Joolatong, gutta percha, gutta Siak, have been given out by the Rubber Association of America:

	Per Lb. C.i.f. New York. Cents.
AFRICAN GRADES	
Red Congo Ball	48
Black Congo—Kassai	48
Black Congo—Lopori	48
Black Congo—Equateur	48
Black Congo—Sangha and similar grades	48
Benguellas—32½% shrinkage	29
Benguellas—28% shrinkage	33
Niger Paste and Flake	28
Red Kassai—Nuggets, Cord and similar grades	42
Massais	55
Red Nunez	55
Accra (Gold Coast) Lumps	28
Lagos Lumps	28
Lump Flake	28
Conakry Niggers	55
Prime Mozambique Ball	52
Sierra Leone Niggers	50
Hausa Ball	35
Hausa Cake	35
Cameroon Ball and similar grades	35
Gambia Niggers	45
Prime Madagascar Qualities, on the basis of 35% shrinkage	35
Madagascar Niggers, on the basis of 45% shrinkage	29
ASSAM AND RAMBONG	
Prime Crepes	60
Good quality Crepes	58
Assam Onions	54
Penang (this includes Java)	37
BRAZILIAN RUBBER	
Up-River Fine Para	68
Island Fine Para	59
Knapsack Madiera Fine Para	73
Madiera Fine Para	69
Tapajos Fine	60
Upper Xingu Fine	63
Mollendo Fine	60
Peruvian Fine	67
Angostura Fine	64
Manaos Weak Fine	56
Lower Amazon Weak Fine	45
Peruvian Weak Fine	55
Up-River Medium Para	63
Island Medium	52
Tapajos Medium	55
Upper Xingu Medium	57
Peruvian Medium	62
Angostura Medium	58
Para Coarse Medium	45
Peruvian Coarse Para	37
Mollendo Coarse Para	37
Rio Negro Coarse	38
Rio Negro Strings	35
Nugget Coarse	46
Angostura Coarse	37
Tapajos Coarse	38
Upper Xingu Coarse	38
Ceara Coarse (Negroheads)	38
Up-River Coarse	40
Upper Caucho Ball	40
Xingu Ball	38
Lower Caucho Ball Slab	36
Islands Coarse	27
Cameta	28
CENTRAL AMERICAN GRADES	
Central Scrap—Esmeralda	39
Central Scrap—Corinto	39
Central Scrap—Mexican	39
Central Scrap—Bluefield	39
Central Slab—Guatemala	32
Central Slab—Colombian	32
Central Slab—Mexican and other slabs of similar nature	32
MEXICAN GUAYULE	
Guayule—Crude with 20% guarantee of shrinkage	35
Guayule—Clean, dry and treated, such as Duro, Triangle, Box Torreon and Alto Brands	48
PLANTATION QUALITIES	
Standard Quality Smoked Sheets	62
Standard Quality First Latex Crepe	63
Off Standard Latex Crepe	62
Off Color Latex	61
No. 1 Amber Crepe	60
No. 2 Amber Crepe	60
No. 3 Amber Crepe, Medium Color	58
No. 4 Amber Crepe (Darkish Color)	57
Prime, clean, light brown Crepe, thick and/ or thin	60
Medium color brown, clean Crepe, thick and/ or thin	58
Good dark brown Crepe, thick and/ or thin	54
Specky brown Crepe, thick and/ or thin	50
Massed or Rolled Crepe	44
Colombo Scrap No. 1 quality	46
Colombo Scrap No. 2 quality	44
Standard Quality smooth smoked sheets	61
Standard Quality unsmoked sheets	60
MISCELLANEOUS	
Mattogrosso Fine	53
Mattogrosso Coarse	38
Caucho Tails	35
Manicaba (basis 30% loss washing and drying)	36½
Ceara Scrap 1	37
Pernambuco Sheet	35
Mangabeira Sheet	35
Upper Caucho Slab	33
BALATA	
Prime Suriname Amber Sheet	97
Fair Average Sheet	95
Venezuela Block	71
Colombian Block	61
Panama Block	59
Other grades of Balata at their relative value.	
GUTTA JOOLATONG (PONTIANAC)	
Palambang	16
Banjermassin	15
Sarawak	14
PRESSED GUTTA JOOLATONG	
Having approximately 40% of shrinkage loss	25
GUTTA PERCHA	
Red Macassan	$3.00
Other grades at their relative value.	
GUTTA SIAK	
Gutta Siak	28

Exchange of Allocation Certificates

In respect to the report published in the August 25 issue of THE RUBBER AGE AND TIRE NEWS concerning the encouragement by the Government of the use of South American rubber, in which it was stated that the Bureau of Imports of the War Trade Board had determined that during the months of August and September, 1918, rubber used in Government work would be replaced by issuing allocation certificates 50 per cent to be Central or South American rubber, 50 per cent rubber from any source, the Rubber Association of America advises rubber manufacturers, importers and dealers that it would be perfectly in order for manufacturers to arrange with their importers and dealers to exchange allocation certificates calling for Para grades for allocation certificates calling for rubber from any source.

Some manufacturers may not be equipped to wash and dry wild rubbers in excess of their own requirements, and it is requested that those who do possess such facilities so advise Harry S. Vorhis, secretary of the Rubber Association. If those desiring to have rubber washed and dried will also advise him, he will make an exchange of the lists.

It is the desire of the War Trade Board that a substantial amount of Central and South American rubber be brought forward, and it is urged that all manufacturers endeavor to adapt their operations to accord with the Government wishes in this respect, and orders be placed to take up all available allocations.

Sewell Declares Dividend

A seven per cent cash dividend was declared on both common and preferred stock of the Sewell Cushion Wheel Co., at its recent annual meeting. The meeting was held by the directors at the company's general offices in Detroit, Mich.

Output of Sulphur Resumed

Advices to the Chemical Division of the War Industries Board are that mining operations have been resumed in part at the plant of the Union Sulphur Company at Sulphur, La., where considerable damage was done by the hurricane that swept over that region on August 6. Shipments of sulphur were resumed last week from the accumulated stocks and rapid progress is being made in the work of restoring normal conditions. Considerable rebuilding will have to be done, but ample material is on hand for the work.

The company carried immense reserves of sulphur above ground so that there will be no interruption in the manufacture of sulphuric acid and other necessary war materials. This reserve pile of the Union Sulphur Company measures 800 feet in length by 200 feet in width, 40 feet high, and represents about fifteen months' mining.

The plant of the Freeport Sulphur Company at Freeport, Texas, is producing its normal tonnage and has a considerable reserve above ground. While the damage to the Union Sulphur Company is unfortunate, especially at this time when sulphuric acid is being produced in such an enormous way, the reserve stock siuation is such that there is no cause for worry. The Union Sulphur Company's operatives are working day and night in the rebuilding of their plant. The sulphur is melted in the ground by steam and hot water and forced to the surface through wells where the molten sulphur solidifies on exposure to the air. The sulphur deposit underlies a bed of quicksand through which it is impossible to drive shafts and mine in the ordinary way. The development of this project is one of the interesting mechanical and chemical achievements of the past decade and, together with the Freeport Company's developments, makes the United States by far the greatest producer of sulphur.

There are two other known deposits which can be quickly opened up in case of necessity. Work is now progressing on the development of one of these deposits.

Telephone Rubber Subject to Replacement

In a recent issue of THE RUBBER AGE AND TIRE NEWS it was stated that rubber consumed on orders and contracts for telegraph companies under Governmental control could be replaced without regard to allocations. The War Trade Board has now ruled that the same applies to rubber consumed on orders and contracts for telephone companies now under Government control.

These provisions covering both telegraph and telephone companies are effective as of August 15, 1918, and apply only to shipments made on or after that date.

French Rubber Committee

A new committee, created for the duration of hosttilities, has been formed by the French *Ministère de l'Armement et des Fabrications de Guerre* (Ministry of Armaments and War Manufactures), and will be in charge of the examination of all questions pertaining to the rubber industry in France. It will centralize, coordinate and control the requirements of the French Government and those of private interests. The placing of orders for crude and manufactured rubber in foreign lands and in France, the manufacture of rubber goods in France and the building up of stocks of both crude and manufactured rubber goods in France will come under its supervision.

Items of Interest to Rubber Men

The Fourth Liberty Loan—The Central and Division Committees for the Rubber Trade of Greater New York—Six Billions to Be Raised—The New York Chemical Show—List of Exhibitors—New Rubber Importer

The Fourth Liberty Loan

The Fourth Liberty Loan campaign will begin September 28 and the amount of the loan will be six billion dollars, the bonds bearing 4¼ per cent interest. Preparations are being made throughout the country for the campaign, which promises to be more intensive than any of its predecessors.

The following organization will represent the rubber trade of Greater New York in this campaign:

Bertram G. Work, The B. F. Goodrich Co., New York, *chairman;* George B. Hodgman, Hodgman Rubber Co., Tuckahoe, N. Y., *vice-chairman;* F. E. Titus, The B. F. Goodrich Co., 1780 Broadway, New York, *secretary;* W. H. Hills, The B. F. Goodrich Co., New York, *assistant secretary.*

CENTRAL COMMITTEE

Bertram G. Work, *chairman,* The B. F. Goodrich Co.; George B. Hodgman, *vice-chairman,* Hodgman Rubber Co.; J. Newton Gunn, United States Tire Co.; W. J. Kelly, Poel & Kelly; Homer E. Sawyer, United States Rubber Co.; Henry Spadone, Gutta Percha & Rubber Mfg. Co.; J. Russell Parker, Parker, Stearns & Co.; Clarence H. Low, U. S. Rubber Reclaiming Co.; F. G. Achelis, American Hard Rubber Co.; Henry C. Pearson, *The India Rubber World,* and H. M. Williams, THE RUBBER AGE AND TIRE NEWS.

DIVISION COMMITTEES

TIRES

J. Newton Gunn, *chairman,* United States Tire Co.; Horace De Lisser, Ajax Rubber Co.; J. B. Cothran, The Fisk Rubber Co.; C. D. Studebaker, Firestone Tire & Rubber Co.; Thomas P. Lindsey, Kelly-Springfield Tire Co.; Charles E. Miller, New York City, and H. J. Moorhead, The B. F. Goodrich Co.

CRUDE RUBBER

W. J. Kelly, *chairman,* Poel & Kelly; L. P. MacMichael, New York; A. H. Brown, Meyer & Brown; Bancroft Henderson, F. R. Henderson & Co.; E. E. Wadbrook, MacNamara & Wadbrook, Inc.; Collier W. Baird, Rubber Trading Co.

BOOTS AND SHOES AND CLOTHING

Homer E. Sawyer, *chairman,* United States Rubber Co.; F. R. Goodell, Converse Rubber Shoe Co.; F. M. Sheppard, Jr., Goodyear Rubber Co.; E. C. Beard, Beacon Falls Rubber Shoe Co., and D. A. Hawkins, J. E. Bates & Co.

RUBBER MEDICAL GOODS

J. Russell Parker, *chairman,* Parker, Stearns & Co.; W. W. Siggis, Whitall-Tatum Co.; N. B. Quick, Miller Rubber Co.; L. H. Rindskopf, Brooklyn Shield & Rubber Co.; John C. Smith, United States Rubber Co.; and John T. Humphrey, United States Rubber Co.

MECHANICAL RUBBER GOODS

Henry Spadone, *chairman,* Gutta Percha & Rubber Mfg. Co.; W. H. Hart, The B. F. Goodrich Co.; H. M. Greene, Manhattan Rubber Co.; L. F. Purtill, New York Belting & Packing Co.; W. R. Bliss, Goodyear Tire & Rubber Co., and J. Stuart Brown, Gutta Percha & Rubber Mfg. Co.

RECLAIMED RUBBER

Clarence H. Low, *chairman,* U. S. Rubber Reclaiming Co.; Clark W. Harrison, Bloomingdale Rubber Co.; and Lloyd Appleton, F. H. Appleton & Son, Inc.

HARD RUBBER

F. G. Achelis, *chairman,* American Hard Rubber Co.; Samuel Dodd, Vulcanized Rubber Co.; Harry Welda, India Rubber Co.; Bruce Bedford, Lucerne Rubber Co.; and John A. Dickson, American Hard Rubber Co.

PUBLICITY

H. C. Pearson, *The India Rubber World,* and Herbert M. Williams, THE RUBBER AGE AND TIRE NEWS.

The Chemical Show

More than 350 exhibitors have signed contracts to date for space at the Fourth National Exposition of Chemical Industries to be held in the Grand Central Palace, New York, during the week of September 23-30. An elaborate and important program has been arranged, the Firestone-Universal film "Careless America" will be shown, also an interesting film of the manufacture of zinc oxide by the New Jersey Zinc Co.

The folowing is a list of some of the exhibitors, who are well known to the rubber industry:

Paul O. Abbé, Abbé Engineering Co., American Aniline Products Co., Inc., American Chemical Society, American Scientific Instrument Co., Aniline Dyes & Chemicals, Inc., Anti-Hydro Waterproofing Co., Arnold Hoffman & Co., Inc., J. T. Baker Chemical Co., Becker, Christian, Inc.; Boyer Oil Co., Inc.; Bristol Co., Inc.; Blown Instrument Vo., Buffalo Foundry & Machine Co., The Ceylon Co., Crane Co., Crane Packing Co., J. H. Day Co., J. P. Devine Co., Du Pont Chemical Works, E. I. Du Pont de Nemours, Wilmington; Du Pont Fabrikoid Co., Edison International Corp., Electrolytic Zinc Co., Foote Mineral Co., The Foxboro Co., Inc.; General Bakelite Co., General Chemicals Co., General Electric Co., Harrison Works, Holly Pneumatic Systems, Hunter Dry Kiln Co., Keystone Minerals Co., A. Klipstein & Co., Walter E. Lummus Co., Inc.; Luzerne Rubber Co., Machinery Utilities Co.; Manufacturers' Record; Marden, Orth & Hastings Co., Inc.; Frederick Maywald, F. C. S.; Merck & Co., National Aniline & Chemical Co., New Jersey Zinc Co., Precision Instrument Co., Precision Thermometer & Instrument Co., Pyro-Electric Instrument Co., Roessler & Hasslacher Chemical Co., Schaeffer & Budenberg Mfg. Co., Stresen-Reuter & Hancock Co., Sturtevant Mill Co., C. J. Tagliabue Mfg. Co., Taylor Instrument Companies, Warner Klipstein Chemical Co., Werner & Pfleiderer Co., Westinghouse Electric & Mfg. Co., Harrison, Inc.

Ocean Commercial Corp. in New Offices

The offices of the Ocean Commercial Corporation, which was formerly located at 74 Wal street, have been removed to larger quarters at 170 Broadway, New York City. This company has offices throughout South America, in London, England; Tokyo, Japan; Odessa, Russia, and in Scandinavian countries, and does a general export and import business, tires and other rubber goods being included in its export lines, and it is now making arrangements to import Brazilian, Peruvian and Ecuador crude rubbers.

News of the Rubber Metropolis

President of Firestone Returns from Vacation—Goodyear Truck to Cross Continent—New Factory Starts in Spite of War—Labor Day in Akron—New War Camera Invented in Akron—Vacuum Treatment for Balloon Fabrics

H. S. Firestone Home from Outing

(Special Akron Correspondence)

H. S. Firestone, president of the Firestone Tire & Rubber Co., returned Sept. 2 from a camping trip in the Blue Ridge mountains with Henry Ford, Thomas A. Edison, Edward N. Hurley of the Shipping Board, John Burroughs, and a number of other equally well-known men. The party left Pittsburg about two weeks ago in "flivvers" furnished by Mr. Ford. They journeyed through the mountains of Virginia, Tennessee and North Carolina.

In a dinner talk before the party left on its trip, Mr. Firestone suggested a new political slogan, "Ford in 1920," and told why he considered the Detroit manufacturer of Presidential timber.

While on the trip Mr. Ford was notified of his selection by Michigan Democrats as a candidate for the United States Senate. "I didn't know it was primary day," he is reported as replying.

Goodyear Sends Truck to Coast

(Special Akron Correspondence)

The Goodyear Tire & Rubber Co. is sending an auto truck on a trip to the Pacific Coast. This company inaugurated the idea of long-distance hauling by motor truck when it opened its Akron-Boston express line. Officials also plan to send a truck to their cotton plantation in Arizona and bring back a load of bales from the mill there.

New Akron Rubber Factory

(Special Akron Correspondence)

Even war times cannot keep new rubber concerns out of Akron. The Quick-Fix Rubber Co. has opened a small plant here. G. W. Reid is general manager.

Akron Man Perfects War Camera

(Special Akron Correspondence)

Government and Goodyear Tire & Rubber Co. officials were highly pleased with the official test made of the new aerial camera perfected by W. B. Harsel and W. B. Weyrick of Akron at Wingfoot Lake.

The camera was sent aloft attached to a kite. Pictures were made at an elevation of 800 and 1500 ft. Prints of these pictures have been forwarded to the War Department.

The camera is connected with a battery box on the ground and the shutter and manipulation of the film is controlled by push buttons.

Labor Day in Akron

(Special Akron Correspondence)

The big rubber factories of Akron celebrated Labor Day with great outings at various parks owned by the companies.

A crowd of 15,000 persons attended the Goodyear Tire & Rubber Co. events at Seiberling Field. Track events, boxing and baseball made up the program.

B. F. Goodrich Co. employes held a similar outing at Summit Beach Park. Athletic events were a feature.

Firestone Tire & Rubber Co. employes held a picnic at Firestone Park.

Vacuum Treatment for Balloon Fabric

(Special Akron Correspondence)

Government officials are now considering a plan to clean all material used in the manufacture of balloon fabric by a vacuum process. It is said that much of the material is rejected by inspectors because of dirt which has been worked into it in some manner.

American Rubber Patents

ISSUED JULY 16, 1918

1,272,467—To Benno B. Leustig, Cleveland, Ohio. Demountable wheel-rim.

1,272,476—To Frank H. Lopes, Cumming, Cal. Tire structure.

1,272,556—To Louise Darby Steward, Boise, Idaho. Sole for boots and shoes.

1,272,576—To Lewis P. Thompson, Minneapolis, Minn. Resilient tire.

1,272,619—To Julian G. Campau, Monroe, Mich., assignor of one-fourth to Charles C. Grodi, Monroe, Mich. Yieldable tire-filling.

1,272,664—to John W. Hummel and Frederick W. Uhde, Philadelphia, Pa. Tire.

ISSUED JULY 30, 1918

1,273,887—to William G. Lindemann, Milwaukee, Wis. Cushion tire.

1,273,964—To Harry A. Webb, Hamden, Conn. Pneumatic automobile tire.

1,274,091—To William Seward, Toronto, Ont., Canada. Manufacture of sheet-rubber.

1,274,207—To Jozef Sordykya, Grand Rapids, Mich. Balloon construction.

1,274,211—To Joseph H. Thesier, Syracuse, N. Y. Tire cleat.

1,274,225—To Albert Monroe Wilson, Cherokee, Iowa. Hose supporter.

1,274,237—To Joseph Borysewski, Forks, N. Y. Tire and fastening means therefor.

COMPARISON, 1917-1918

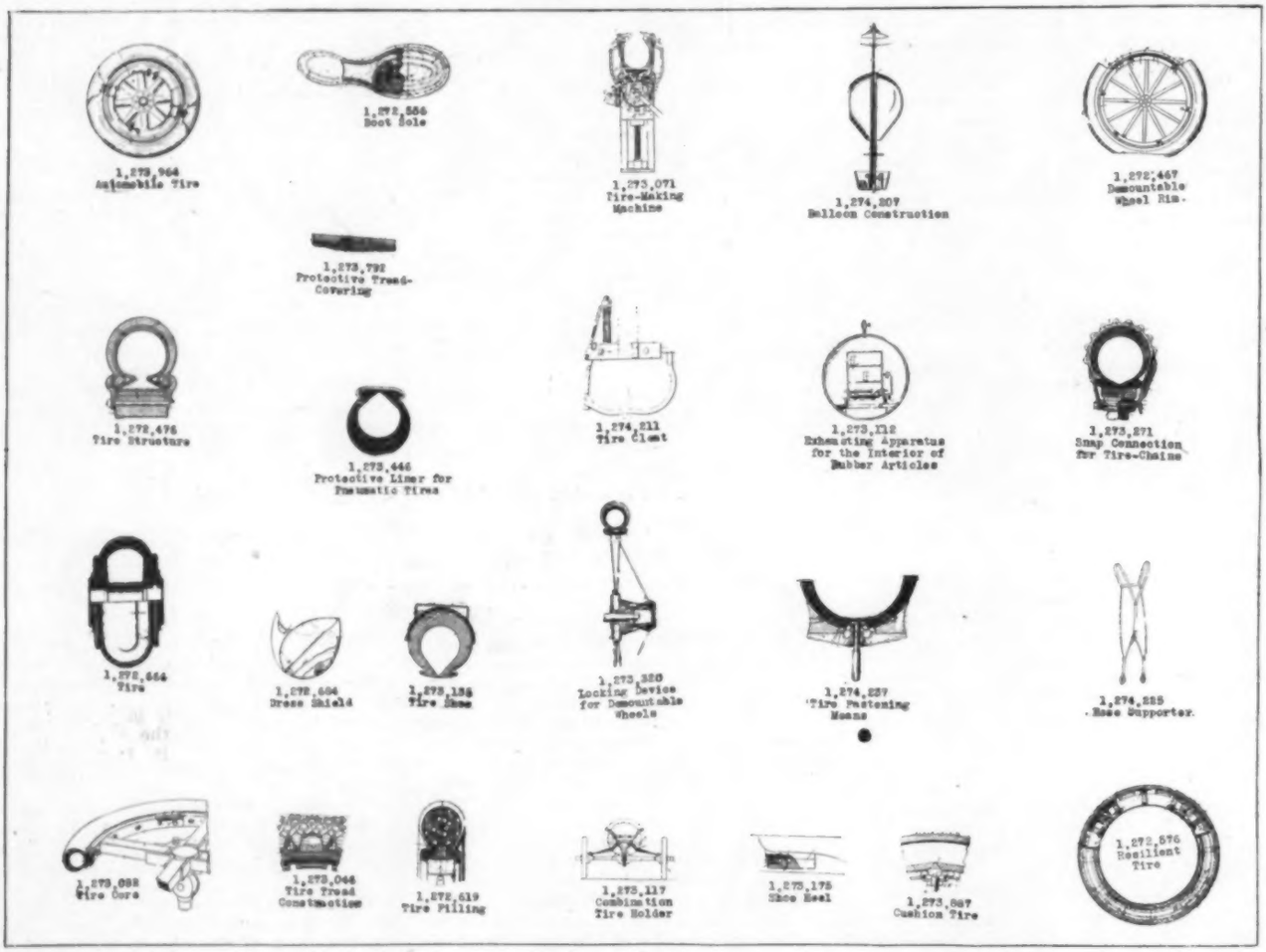
	August, 1917.	August, 1918.
Plantations	15,158	13,657
Paras	1,760	2,260
Africans	107	28
Centrals	23	88
Guayule	194	59
Manicobas and Matto Grosso	47	....
	17,290	16,092

ARRIVALS PLANTATIONS FOR AUGUST, 1918, SHOWING PORTS OF ORIGIN AND ARRIVAL

From	*Arrived at*	*Tons*
Singapore	San Francisco	606
Singapore	Seattle	4,700
Singapore	Tacoma	958
Singapore	Vancouver	2,257
Malacca	Seattle	1,782
Penang	Tacoma	130
Penang	San Francisco	268
Batavia	San Francisco	1,243
Sourabaya	San Francisco	290
Japan and others	Seattle	161
Japan and others	San Francisco	380
Port Swettenham	New York	328
Port Swettenham	Tacoma	21
London	New York	48
British India	San Francisco	168
British India	New York	317
		13,657

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports:		
New York		693
Pacific Ports:		
San Francisco	2,955	
Seattle	6,643	
Tacoma	1,109	
Vancouver	2,257	
		12,964
		13,657



1,272,684—To Robert Levi, New York, N. Y. Dress-shield and process of making same.

1,273,032—To Don A. Clark, Willoughby and Clyde E. Lowe, East Cleveland, Ohio, assignors to The Clyde E. Lowe Co., Cleveland, Ohio, a corporation of Ohio. Tire core.

1,273,046—To Harry W. Dyer, East Orange, N. J. Tire-tread construction.

1,273,071—To Curt Kuentzel, Youngstown, Ohio, assignor to the Republic Rubber Co., Youngstown, Ohio. Tire-making machine.

1,273,112—To Chester J. Randall, Naugatuck, Conn., assignor to The Goodyear's Metallic Rubber Shoe Co., a corporation of Connecticut. Apparatus for exhausting the interior of rubber articles.

ISSUED JULY 23, 1918

1,273,117—To Raymond C. Agner, Burlington, Wis. Combination tire holder.

1,273,135—To Gustaf Bergkvist, Mosquero, N. Mex. Tire shoe.

1,273,175—To Francis A. Nolan, St. Paul, Minn. Resilient shoe heel.

1,273,271—To Alexander Purdie, Wyandotte, Mich. Snap connection for tire chains.

1,273,320—To Clement Booth, Narberth, Pa. Locking device for demountable wheels.

1,273,446—To Robert L. Belton, Dayton, Ohio. Protective liner for pneumatic tires.

1,273,792—To John Laube, Deer Island, Ore. Protective tread-covering for automobile tires.

Crude Rubber Importations

The folowing table shows the importations of crude rubber into the United States during August, 1918. The figures were compiled by The Rubber Association of America, Inc., 52 Vanderbilt Avenue, New York City:

ESTIMATED NET WEIGHTS

PLANTATIONS

From	*Tons*
Liverpool	48
London	485
British India	8,521
Singapore	1,782
Malacca	1,243
Batavia	349
Port Swettenham	290
Sourabaya	398
Penang	541
Japan and others	13,657

AFRICANS

From	*Tons*
Bordeaux	20
Havre	8
	28

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	88
Guayule (Mexico)	59
	147

PARAS

Santos	2,260
	2,260

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	Ton.		Ton.
Waste	260	Miscell. Gum	331
Balata	33		

Gutta Percha Enlarging Plant

The Gutta Percha and Rubber Manufacturing Co., 126 Duane Street, New York, is building an addition to its plant on Skillman Street, Brooklyn, N. Y.

TIRE NEWS

Standardization of Tires and Rims

At the semi-annual meeting of the Standards Committee of the S. A. E., held on June 16 at the Engineers' Club, Dayton, Ohio, reports of the various divisions of this committee were presented to the Society. The Tire and Rim Division submitted definite recommendations on the following subjects:

Pneumatic tire sizes for passenger cars and commercial vehicles.
Rim sections and contours for pneumatic tires for passenger cars and commercial vehicles.
Valve holes in rims for passenger cars and commercial vehicles.
Valve holes for motorcycle rims.
Carrying capacities, inflations pressures for automobile pneumatic tires.
S. A. E. deflection and set test of rims for automobile pneumatic tires.
Wood felloe dimensions, pneumatic tire rims.
Wood spoke dimensions for commercial vehicle wheels.

The report of this division was concluded by a proposed specification relating to tires and rims for airplane landing wheels, which, however, was not submitted for definite action. In this connection it is well to say these division reports before becoming S. A. E. standards or recommended practice must receive the affirmative letter vote of the majority of the voting members of the S. A. E.

Automobile Pneumatic Tire Sizes

The possibility of reducing the number of tire sizes has been under consideration by the Tire and Rim Division of the S. A. E. for some time, but an agreement was not reached until recently when the Commercial Economy Board of the Council of National Defence requested that the subject be considered by the War Service Committee of the Rubber Industries of the U. S. A.

Accordingly, as reported in previous issues of THE RUBBER AGE AND TIRE NEWS, this War Service Committee met in Akron, Ohio, on April 2, 1918, following a meeting at the same place and day of the Tire and Rim Association. At the latter meeting certain tables were presented showing the different sizes now being manufactured and stocked.

The first step was to select a simplified series of sizes that would take care of the greater part of the present demand. This series was analyzed from an engineering standpoint to determine if it were adequate for the service and if the sizes in it could be reduced still further.

As a result the War Service Committee recommended that the simplified list be divided into five classes, that the production of the sizes listed in the first four classes be discontinued on the dates given, and that only the sizes in the fifth (Class A) be produced after November, 1920.

The story of this plan was published in full in the July 10 issue of THE RUBBER AGE AND TIRE NEWS.

The recommendations of the Tire and Rim Division of the S. A. E. as presented in the accompanying table includes inch dimensions for oversize tires and tire-seat diameters, together with the corresponding metric dimensions. It is recommended that automobile manufacturers use as original equipment the nominal tire and rim sizes, thus permitting the use of the oversize equipment:

PROPOSED STANDARD PNEUMATIC TIRES AND RIMS FOR PASSENGER CARS AND COMMERCIAL VEHICLES

Nominal Tire and Rim Sizes		Oversize Tire		Tire-Seat Dia. (Rim)		Type of Rim
Inches	Mm.	Inches	Mm.	Inches	Mm.	
30x3½	90/585	31x4	105/585	23	585	clincher
32x3½	90/635	33x4	105/635	25	635	straight side
33x4	105/635	34x4½	120/635	25	635	straight side
34x4½	120/635	35x5	135/635	25	635	straight-side
36x6	150/610	38x7	175/610	24	610	straight side
38x7	175/610	40x8	200/610	24	610	straight side
40x8	200/610	.....	.....	24	610	straight side

NOTE.—In inch nomenclature, nominal tire diameter = tire seat diameter × twice tire cross-section diameter. Sizes are designated by giving outside diameter of tire and tire-section, diameter, as (30x3½).

In metric nomenclature, the nominal diameter = tire-seat diameter. Sizes are designated by giving tire cross-section diameter and tire-seat diameter. When spoken, the size is referred to as "90 for 585"; but is branded as 90/585.

The adoption of this standard list of sizes cancels present S. A. E. tire and rim standards.

Rims for Automobiles

The rim and contour dimensions given in the following table and drawings are proposed for S. A. E. standards as applying to the tire sizes suggested for standardization. The thickness of straight-side rims is not specified for the reason that it depends upon the steel composition and hardness, which have not been standardized, but are required to conform with the S. A. E. deflection and set test for rims. This dimension is left to the judgment of the rim manufacturers in present practice.

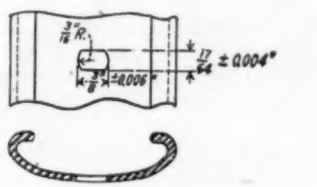
Automobile Rim Valve Hole Size

The Tire and Rim Division of the S. A. E. recommends that the valve hole in rims for the proposed standard tire sizes shall be ⅝ in. in diameter up to the 6-in. rim, inclusive. That this conforms with the existing practice is shown by the following table:

Present practice, valve hole diameters.....	½	11/16	9/16	⅝	21/32	½ x 27/64
Manufacturers using each size.....	1	2	4	5	2	1

Motorcycle Valve Hole Size

The valve hole in both the BB and CC types of motorcycle rims has been found to average ⅜ by 17/64 in. This size has therefore been adopted for the U. S. motorcycle.



MOTORCYCLE VALVE HOLE

The division recommends that the dimensions and tolerances be as shown in the accompanying drawing for S. A. E. standard.

Pneumatic Tire Inflation Pressures

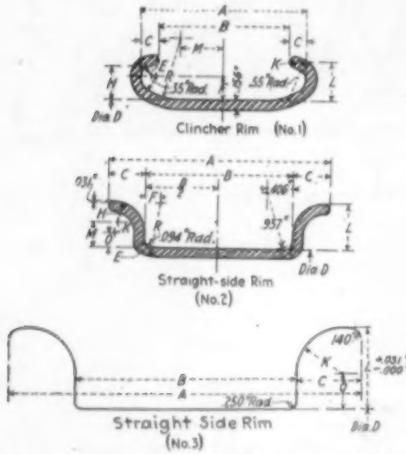
The present recommended carrying capacities and inflation pressures apply to sizes from 3 to 6 in., inclusive. It is recommended that the following values for 7 and 8-in. tires be added to the present S. A. E. standard, the values being recommended by the Tire and Rim Association:

Size of Tire		Maximum Load	Maximum Pressure
In.	Mm.	Pounds	Pounds
7	175	2700	100
8	200	3650	110

Motorcycle Tire Capacities and Pressures

The division recommends that the carrying capacities and inflation pressures for motorcycle tires to be

adopted by the Tire and Rim Association be adopted by the Society of Automotive Engineers as S. A. E. standard.

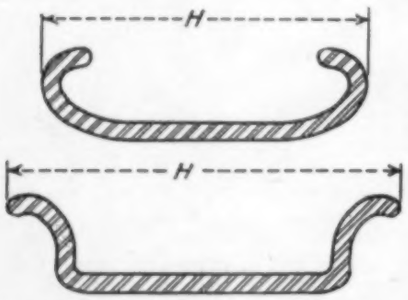


RIM SECTION AND CONTOURS FOR PNEUMATIC TIRES

Rim Tests

The method of making the S. A. E. deflection and set test of rims was approved some time ago, but since the use of quick-detachable clincher rims is being discontinued the division recommends that the following obtain for S. A. E. standard.

"The recommended 'S. A. E. Deflection and Set Test' of rims is a pressure test with predetermined deflection under predetermined pressure. The test is made with water pressure.



SECTIONS FOR DEFLECTION AND SET TESTS

"The measurements of deflection for either a clincher or a straight-side rim should be made across the extreme width, as shown by H on the accompanying illustration.

"Deflection should be measured from a fixed inflation load at 25 lb. per sq. in. for 3½, 4 and 4½-in. sections, and 50 lb. per sq. in. for 6-in. sizes and larger, up to a predetermined maximum as follows:

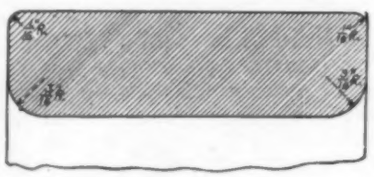
Rim Size Nominal Inches	Pressure, Pounds	Maximum Deflection Inches	Total Permanent Set, Inches
3½	140	0.06	0.02
4	160	0.07	0.03
4½	180	0.10	0.06
6	200	0.15	0.06
7	200	0.15	0.06
8	Yet	to be	determined

"In conducting the tests, measurements of deflection should be made after load increments of 25 or 50 lb. as above are added; at a corresponding set the load should be released."

Simplification of Solid Tire Sizes

This subject is being worked out by the Technical Committee of the Rubber Industries of the U. S. A. and the report refers only to progress so far accomplished in this direction.

The S. A. E. recommendations re-



EDGES OF FELLOE BANDS

ferring to the edge of felloe bands has been approved to read as follows:

"Bands to be rounded on two edges with radius not to exceed 1/16 in. (1.6 mm.) and on both inside edges with a radius of 3/16 in. (4.76 mm.)."

This change is desirable, as wheel makers state that band makers are not using the 45-deg. chamber as at present specified, and the revised specification will conform at present practice.

Airplane Landing Wheels and Tires

The division reported on the progress made in the matter of airplane landing wheels, tires and rims. The data below given was worked out by the Aeronautic Division. The Tire and Rim Division will check over this data and will work in cooperation with Professor McGregor for the United States Government and submit recommendations later.

The specification as submitted below covers the general requirements of tires and tubes for airplane landing wheels, it being the aim to confine the number of sizes to as few as possible. Larger sizes than listed below will probably be required, and the proposed specification will be extended to include these sizes as soon as demanded.

All tires and tubes shall be free from defective materials and workmanship and shall conform to the following general construction, limits and tests:

Tires shall be of the clincher type, smooth thread, constructed of two or more cord plies of long staple cotton, so arranged that an equal number of plies run in each diagonal direction across the tire. Each ply shall be separated from the adjoining ply by rubber compound. Enough rubber compound must be put on the side walls to insure ample protection of the body of the tire. The thread stock shall have a minimum specific gravity of 1.30. The inside of tires need not be painted.

Tire beads shall be constructed so as to insure against pinching and to properly fit the rim contours shown in the accompanying drawing and table.

The dimensions and weights of the finished tire shall be according to the following table and within the limits specified:

Marking

Each tire shall be branded with the manufacturer's name, serial number, tire size, and rim number the tire is intended for.

Tubes

Inner tubes for airplane tires shall be constructed of rubber compound to dimensions, weights and tolerance given in the table and shall withstand the physical tests specified:

Tube Tests

Tubes must withstand the water test mentioned under the heading of "Tire Tests" and shall have the following physical properties:

Minimum tensile strength.....1500 lbs.
Minimum stretch.....600 per cent
Maximum set (2 minutes after rupture) ..... 25 per cent

The valve to be used will be of the

PROPOSED STANDARD PNEUMATIC TIRE RIM SECTIONS AND CONTOURS FOR PASSENGER CARS AND COMMERCIAL VEHICLES

Draw No.	Nominal Tire and Rim Size	Rim Dia. (D)	Rim Circum.* (Tire Seat)	Rim, Type	A	B ±0.047	C	R	E	F	H	K	L	M	O
1	30x3½	23	72.257	Clincher	2.600	2.050	0.275	0.910	0.1400	0.3400	0.50	0.0780	0.5780	0.680	.....
2	32x3½	25	78.540	Straight-side	3.432	2.312	0.560	0.840	0.1875	0.2500	0.32	0.5100	0.6870	0.367	0.1990
	33x4	25	78.540	"	3.888	2.688	0.600	0.840	0.1875	0.2500	0.34	0.5600	0.7800	0.440	0.2450
	34x4½	25	78.540	"	4.380	3.120	0.630	1.095	0.1875	0.3125	0.38	0.6150	0.8750	0.495	0.3030
3	36x6	24	75.398	"	6.330	4.330	1.000	.....	.....	.....	.....	0.7187	1.2656	.....	0.5469
	38x7	24	75.398	"	7.000	5.000	1.000	.....	.....	.....	.....	0.7187	1.2656	.....	0.5469
	40x8	24	75.398	"	8.500	6.000	1.250	.....	.....	.....	.....	0.8750	1.5000	.....	0.6250

* Tolerance for rim circumferance, ±0.047 in. All dimensions given in inches.

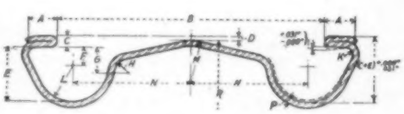
bent type, with adapter for American and foreign pumps.

Tire and Tube Tests Combined

The manufacturer shall make a sufficient number of tests on the tires and tubes coming through production to satisfy himself that the product satisfies the requirements of this specification.

Impact Test

The tire is mounted with the tube on a special rim of standard contour that will withstand the pressures given in the table. The tube is inflated with air and maintained at a pressure of 150 lb. per sq. in. In this condition the tire must withstand a blow delivered on the thread by a weight of 181 lb. (82 kilos) having contact surface as indicated in the diagram and falling through the distance indicated in the following table:



CROSS-SECTION OF LANDING-WHEEL RIM

DROP (181-LB. WEIGHT)

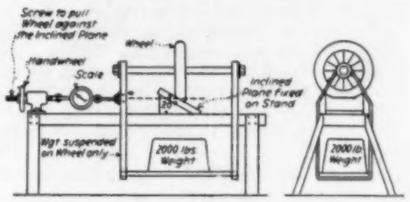
Tire Size (in mm.)	In Inches.	In Millimeters.
75/700	45	1143
100/700	55	1397
125/750	55	1397
150/800	55	1397

Water Pressure Test

All airplane tires from 75/700 to 150/800 mm., inclusive, when mounted on special rim of standard contour shall withstand a water test of 200 lb. pressure not to be raised at a rate exceeding 50 lb. per minute.

Side Thrust Test

All airplane tires from 75 x 700 to 150 x 800 mm., inclusive, when mounted on standard rims inflated to 50 lb. air pressure and loaded with a dead weight of 2000 lb. shall withstand 1800 lb. lateral stress against a surface placed at an angle of 20 deg. with the horizontal, as shown in the illustration, without pulling off the rim.



LANDING-WHEEL SIDE-THRUST TEST

Landing Wheel Rims

The accompanying table shows the proposed landing wheel rim dimensions. Additional inspection requirements besides those indicated in the table are that the rim out-of-flat shall not exceed 1/16 in. when free of surface plate; rim tolerance for out-of-round is 3/32 in.; buckled rims are covered by the surface plate inspection and tolerance limits; rims must be free of defective welds.

TIRE DIMENSIONS AND WEIGHTS

	Dimensions: Size *Tire	Size: Rim No.	Thickness: Tread, Min.	Thickness: Side-wall, Max.	Weights† Max.	Weights† Min.
Millimeters	75/700	U_2	1.588	0.794	2.410 kg.	2.123 kg.
Inches (approx.)	28x3		1/16	1/32	5 lb. 5 oz.	4 lb. 11 oz.
Millimeters	100/700	Z_2	2.381	1.191	4.137 kg.	3.851 kg.
Inches (approx.)	28x4		3/32	3/64	9 lb. 2 oz.	8 lb. 8 oz.
Millimeters	125/750	Z_2	2.381	1.191	4.989 kg.	4.650 kg.
Inches (approx.)	30x5		3/32	3/64	11 lb. 0 oz.	10 lb. 4 oz
Millimeters	150/800	Z_3	3.175	1.191	6.002 kg.	5.615 kg.
Inches (approx.)	32x6		1/8	3/64	13 lb. 4 oz.	12 lb. 6 oz.

* Section widths and tire diameters when inflated 50 lb. per sq. in. shall not vary more than 4 per cent over or more than 2 per cent under nominal specified tire sizes.
† Weight without flap.

TUBE DIMENSIONS AND WEIGHTS

	Tire Size	Mandrel Diam., Min.	Wall Thickness. Min.	Weight.* Approx.	Specific Gravity, Max.
Millimeters	75/700	47.63	1.194	0.4536 kg.	1.25
Inches (approx.)	28x3	1 7/8	0.047	1 lb. 10 oz.	1.25
Millimeters	100/700	60.33	1.372	0.6804 kg.	1.25
Inches (approx.)	28x4	2 3/8	0.054	1 lb. 8 oz.	1.25
Millimeters	125/750	76.20	1.575	0.9355 kg.	1.25
Inches (approx.)	30x5	3	0.062	2 lb. 1 oz.	1.25
Millimeters	150/800	82.55	1.575	1.1911 kg.	1.25
Inches (approx.)	32x6	3 1/4	0.062	2 lb. 10 oz.	1.25

* It is suggested that the maximum and minimum weights be specified for tubes as well as for the tires.

TABLES OF AIRPLANE LANDING-WHEEL RIM DIMENSIONS

IN INCHES

Rim Size	Tire Size: Mm.	Tire Size: Inch (Approx.)	A +0.031 −0.000	B ±0.046	C +0.021 −0.006	D ±0.016	E	F	G	Radii: H	Radii: K	Radii: L	Radii: M	N	P	Diam. R	Circum.* (π R.)
U_2	75/700	28x3	11/32	1 11/32	0.104	0.049	11/32	11/32	0.159	1/16	0.039	1/32	11/32	11/32	0.052	21 11/32	67.201
U_3	60/575 75/600	23x2½ 24x3	11/32	1 11/32	0.104	0.049	11/32	11/32	0.159	1/16	0.039	1/32	11/32	11/32	0.052	18 1/16	56.598
Z_2	100/700 125/750	28x4 30x5	1/16	2 11/32	0.104	0.042	1/16	1/16	0.266	1/16	1/16	3/32	1/8	1 1/16	0.078	20 1/32	63.323
Z_3	150/800	32x6	1/16	2 11/32	0.144	0.082	1/16	1/16	0.266	1/16	1/16	3/32	1/8	1 1/16	0.094	20 1/32	63.323

*Tolerance from Nominal after Lacing +0.000 to −1/16 in.

IN MILLMETERS

Rim Size	Tire Size: Mm.	Tire Size: Inch (Approx.)	A +0.787 −0.000	B ±1.168	C +0.533 −0.152	D ±0.406	E	F	G	Radii: H	Radii: K	Radii: L	Radii: M	N	P	Diam. R	Circum.* (π R.)
U_2	75/700	28x3	5.156	40.868	2.642	1.245	10.719	5.156	4.039	3.175	0.991	5.563	7.544	17.856	1.321	543.330	1706.903
U_3	60/575 75/600	23x2½ 24x3	5.156	40.868	2.642	1.245	10.719	5.156	4.039	3.175	0.991	5.563	7.544	17.856	1.321	457.606	1437.587
Z_2	100/700 125/750	28x4 30x5	7.950	68.273	2.642	1.067	14.300	4.775	6.756	4.775	1.981	9.525	12.700	30.174	1.981	511.962	1603.402
Z_3	150/800	32x6	7.950	68.273	3.658	2.083	14.300	4.775	6.756	4.775	1.981	9.525	12.700	30.174	2.388	511.962	1603.402

* Tolerance from Nominal after Lacing +0.000 to −1.981 mm.

Big Cut in Automobile Production

Output Reduced to Twenty-Five Per Cent of That for 1917—War Industries Board Makes Significant Statement—Must Economize Iron and Steel—Board Refuses to Make Promises

The manufacture of passenger automobiles for the second half of this year will be reduced to twenty-five per cent of the output of the entire year of 1917. Following that time no assurance is given the manufacturers, and they are significantly urged to transform their plants into war production plants as soon as possible.

Arrangement for the cut in production was made in a conference held by Bernard M. Baruch, chairman of the War Industries Board, and other members of the Board with Hugh Chalmers and Albert Reeves, representing the automobile industry. The business affected by this sweeping order represents an investment of a billion dollars.

The agreement between the War Industries Board and the automobile manufacturers is expressed in a letter addressed to the National Automobile Chamber of Commerce and signed by Alexander Legge, vice-chairman; Edwin B. Parker, Priorities Commissioner; J. L. Replogle, Director of Steel Supply, and George N. Peck, Commissioner of Finished Products of the War Industries Board, who served as a committee with full power to act for the Board in the automobile negotiations.

In addition to the arrangement by which the automobile manufacturers agree not to produce more than twenty-five per cent of the passenger cars produced by them in 1917 in the second half of this year, it is agreed that preference treatment will be extended the manufacturers so they may obtain materials to "match up" stocks in hand, provided the manufacturers agree to the pledge relative to production. In evening up their stocks now in process of manufacture the automobile men agree that plants which have an excess of steel shall turn over to other plants that can use it such steel as may be required to complete their production and is not needed for war work.

Concerning production after December 31, 1918, the War Industries Board makes this significant statement:

Board Will Make no Promises

"The representatives of the Board are able to make no promises. Because of the great requirements for iron, steel and coal in the war programme, the members of the committee again urge members of the automobile industry to make all possible haste in converting their plants so they may be used for direct or indirect war work."

Following is the full text of the letter to the automobile men containing the agreement relative to curtailment:

"Gentlemen—Supplementing our letter to you of the 9th, inst., we beg to advise that we have now received most of the reports embodying the data and information which we requested you to furnish us, and have given these reports careful study and consideration. From them it appears that the stocks of raw materials and of semi-finished material in the hands of manufacturers of passenger automobiles, while large, are greatly unbalanced, with the result that these large stocks, aggregating approximately $150,000,000, cannot be liquidated until they have been 'matched up' with other materials necessary to manufacture the completed cars.

"The conclusion has been reached that it is in the public interest, as well as in the interest of your industry, that it be assisted as far as practicable, without interfering with the war programme, in the liquidation of its stocks now on hand, and to that end the priorities division of the War Industries Board will accord a degree of preference designed to accomplish this result to all manufacturers of passenger automobiles who will subscribe to a pledge to be prescribed by the Priorities Commissioner embodying in substance the following:

"(1) That the manufacturer will limit his purchase of materials, equipment and supplies to such as are absolutely necessary to match up its stocks now on hand.

"(2) That its production of passenger automobiles, and all repair parts therefor, shall not for the six months ending December 31, 1918, exceed twenty-five per cent of its production for the calendar year 1917.

Want Economy in Iron and Steel

"(3) That it will conserve and economize in every possible way its stocks of iron and steel and their products now in its hands, or that may come into its possession, and will release on request of the War Industries Board to such other manufacturer of passenger automobiles as may be designated by the said Board such of its stocks as can be utilized by such other manufacturer, and which are not required by it for either the limited production above specified or for war work.

"(4) That it will from time to time render such reports of its activities under oath or otherwise as may be called for by the War Industries Board.

"The War Industries Board will, in carrying into effect the terms of the pledge herein provided for, use as a basis, as far as applicable, the sworn reports recently rendered it in pursuance of its request.

"In justice to the passenger automobile industry we feel again impelled, as the situation appears to us now, to frankly repeat our statement to you of the 9th inst., that the urgent war requirements for iron and steel are so great that the probability of your industry procuring iron and steel after January 1, 1919, for the manufacture of passenger automobiles is so uncertain that we again urge the members of your industry to as rapidly as possible utilize your facilities for the production of direct and indirect war requirements, not only in the interest of the nation, but in the interest of your industry itself. In such effort the members of your industry will have the active and whole hearted co-operation of this Board."

Notes of Interest to Tire Men

Firestone Tire & Rubber Co. Insures Twelve Thousand Employes—New Jersey Upholds Price Control—Maker Guarantees Article Bearing His Name and Can Name a Standard Price—Amazon Acquires O'Neil

Firestone Insures Employes

Over 12,000 employes of the Firestone Tire & Rubber Company, Akron, Ohio, were covered by insurance at the company's expense by a resolution adopted by the directors at their August meeting. The insurance plan provides for every man and woman who has been with the company for over thirty days. Executives and workmen, men and women, share alike according to length of service with the company. The insurance is cumulative and increases in amount for each year of service with the company up to the fifth year, after which the employee enjoys the maximum benefit of $1000.

This announcement marks another step in President Harvey S. Firestone's plan for closer relations between the company and its employes. This policy has resulted in the building of Firestone Park to improve housing conditions, the erection of a modern and fully equipped club house for the employes, a Y. W. C. A. building for the accommodation of the women, and the establishment of a bank near the plant to make saving and investment easy.

Pennsylvania Rubber Reelects Officers

At the annual meeting of the stockholders of the Pennsylvania Rubber Co., Jeannette, Pa., H. W. DuPuy was reelected president; Charles M. DuPuy, vice-president; Seneca G. Lewis, general manager; and G. W. Shively, secretary. A quarterly stock dividend of 1¾ per cent on preferred stock and 1½ on common stock was declared payable September 30.

New Jersey Upholds Price Control

"A person has a property interest in his trade name and good will, and will, even in the absence of statute be protected against injury to that trade name and good will," in the opinion handed down by Vice-chancellor Lane of New Jersey, enjoining Hahne & Co., of Newark, that state, from selling Ingersoll watches at less than list price. So long as the maker's name is on a product, and it is protected by his guaranty, he has every right to name a standard price for it, if the article contains a notice of the conditions under which it is sold, without necessarily violating the Sherman or Clayton acts. Although on the surface this decision would appear to differ from recent practice of the Federal Trade Commission, and from decisions of the United States Supreme Court, Lane held that the latter court had "never passed on the precise situation presented here."

Amazon Acquires O'Neil Accessory Business

A recent development of interest in tire manufacturing circles is the purchase of the tire accessory business of the O'Neil Tire & Rubber Co., Akron, Ohio, by the Amazon Rubber Co., also of Akron.

W. J. O'Neil, founder of the O'Neil Tire & Rubber Co., was a pioneer in the manufacture of tire accessories and for more than ten years his products have enjoyed wide distribution. The purchase made by the Amazon Rubber Co. includes the exclusive right to the name "O'Neil" as an accessory trade name, all unfilled orders on hand, and the good will of the O'Neil company's trade.

News of the Tire Trade

Ajax Increases Turnover and Profits—Conferences to Promote Use of Motor Trucks—Effect of Tire Output Curtailment on Akron Industry and Population—Pennsylvania Rubber's Dividend—Some Personal Notes

Ajax Shows Big Earnings

Reflecting the growing strength of the Ajax Rubber Co., Inc., New York, and the soundness of its position in the rubber trade, a statement of the company's business for the first six months of the present year indicates that its gross sales are but two million less than the total amount of sales for 1917. As revealed at the time of the last annual report, this latter figure was $14,849,525 for the combined Ajax and Racine Rubber companies, the latter of which is subsidiary. With facilities to continue for the remainder of the year at its present rate, an increase in business amounting to more than 70 per cent:

Balance Sheet, June 21, 1918

ASSETS	
Cash on hand and in banks	$581,040.32
Bills receivable	58,813.58
Subscription to Liberty Bonds	175,923.00
War Savings Stamps	7,100.00
Accounts receivable	4,979,223.26
Deferred assets	220,544.16
Inventories	5,126,637.88
Good will account	1,874,874.16
Investment account	13,646.73
Plant, equipment, buildings, furniture and fixtures	2,510,457.05
	$15,548,260.14
LIABILITIES	
Accounts payable (not due)	$1,267,989.17
Bills and loans payable	4,015,000.00
RESERVES	
For plant depreciation	408,974.92
For bonuses to dealers and employes	249,549.65
For taxes (not providing for Federal war taxes, excess profits and income taxes)	80,037.52
For bad debts	30,724.90
For cash discounts (on accounts receivable)	93,535.31
Surplus Dec 31, 1917 $768,840.60	
Net earnings from Jan. 1 to June 29, 1918 1,959,608.07	
Total surplus $2,728,448.67	
Two quarterly dividends paid 426,000.00	
Net surp. after paying dividends	2,302,448.67
Capital stock issued	7,100,000.00
	$15,548,260.14

Whereas at the end of 1917 profits for the year were placed at $1,955,293, net earnings for the first six months of the present year are a few thousand dollars in excess of that mark, $1,959,608. This amount added to the surplus of $768,840, brought forward from the first of the present year, now gives the company a surplus of $2,728,448. In achieving the same mark for net earnings in six months that required a year in the previous report, the company not only reflects its increased sales, but the careful management which has increased profits by a greater extent than would have been furnished automatically from those sales.

Cash on hand and in banks shows a healthy growth from little more than a quarter million at the year's beginning, to $581,040. Inventories have been slightly reduced, as might be expected under conditions now governing the rubber industry; they now stand at $5,126,637. In sympathy with the increased scale on which Ajax is now operating accounts receivable have gone from something more than $2,000,000 to their present figure of $4,979,223.

Bleiler Sells Republic Tires

J. B. Bleiler has been made a special representative of the Republic Rubber Corporation, Youngstown, Ohio. His headquarters will be in Cleveland, Ohio.

Truck Owners' Conferences

Carefully-matured plans for forthcoming conventions of the Truck Owners Conference, Inc., in many of the larger cities show that this national movement is the most important ever sponsored by the industry.

As announced this week by Harold P. Gould, Chairman of the Conference, plans have been laid for nineteen two-day conferences in as many cities during the next ten months. The opening conference will be held in Detroit, September 19 and 20, at the Board of Commerce Building. The official program will consist of Detroit speakers, each a well-known truck expert in his particular field. Special films of a few of the more efficiently operated truck fleets in Detroit and Chicago will be shown.

Addresses by both large and small truck operators on their experiences in using methods that reduce operating expense and general discussions on the facts thereby brought out will feature all conferences. The purpose throughout is to secure greater efficiency in truck operation the country over. The subjects discussed range from "Loading and Unloading Methods that Save Time" and "Hauling More Goods with Fewer Units" to "Simplicity and Advantages of Keeping Costs on the National Standard Truck System."

Everything spoken at these conferences represents absolute knowledge on the part of experienced operators, some of whom will travel a thousand miles to give the assembly the benefit of all new and good features they have developed. The conferences are open to all interested truck users—no fee of any kind being asked. The conference is not open, however, to the trade with the exception of specially invited representatives.

The various cities scheduled for conferences extend from coast to coast and each has been chosen because of a central location whereby as many cities as possible, especially in that locality, may be represented at each conference. Former conferences held in New York City, Chicago and Detroit, have been such unqualified successes that the outlook for successful conventions in the nineteen conference cities is most promising. It is expected that hundreds of truck operators, both large and small, will be in attendance at each convention. Information concerning these conferences may be obtained by addressing the Truck Owners Conference, Inc., at 327 So. La Salle St., Chicago.

Captain Miller to Visit Akron

Capt. Robert F. Miller, of the Sanitary Corps, now on temporary duty at the Medical Supply Depot in Chicago, has been ordered by the War Deuartment to make not more than two trips each month to the plant of the Miller Rubber Co., in Akron, Ohio, with reference to the production and delivery of material on contract. Captain Miller will send a monthly report of his Akron trips to the Adjutant-General of the Army and to the Surgeon-General of the Army.

Rubber Man Wounded in Air Service

Leroy Prinz of St. Joseph, Mo., who was formerly a rubber salesman in that city and Kansas City, is now a lieutenant in the Air Service in France.

Effect of Curtailment in Akron

(Special Akron Correspondence)

The ban placed upon the manufacturing of tires by the Government is frankly viewed with dismay by rubber manufacturers, both large and small.

The smaller rubber manufacturers met several weeks ago, and have kept their action a profound secret as far as official announcement is concerned.

At the time of the meeting several of the smaller men admitted, however, that the situation was critical, and unless relief could be obtained from Washington it might be necessary to close their doors.

Several of the larger manufacturing heads in discussing the meeting said that their position was practically as critical as that of the small manufacturers.

The war orders which have come to the big factories have kept them going. The smaller concerns, however, are not in a position to bid against the large plants, and it seems that they will be crowded out.

One of the large manufacturers, in speaking of the situation, recently said that they had quit hiring men altogether, and were only replacing those who were being called to the colors.

"We do not see how we can keep going at this rate," he said. "The Government has cut down our product, and at the same time it will be necessary to invest more money in war loans. The best we can do is try."

He said that one brand of tires which had been made in one large department of his factory had been discontinued and all the tire output now was being manufactured in the one department which formerly made another brand.

The pleasure car tires which are made in his factory, he said, amounted to only about 15 per cent of the tires which were made last year.

The manufacturers are also fearing that the Government will establish rules against the hoarding of tires. This practice is already under way in this city and others in which the situation is known, and it is feared that if a law against hoarding is passed it will be interpreted to include possible legitimate stocks, which will make the tire market that much more precarious.

At the meeting of the small manufacturers, it is understood, a committee was appointed to go to Washington to place their plight before the Government and point out that the present ruling is a hardship on the small man who cannot stand a 50 per cent reduction of his output and remain in business, and cannot compete with the large manufacturer for Government orders, while it favors the big fellow who can afford to underbid them for Government work.

The effect upon Akron as a whole is also being discussed privately, and it is feared that there will be a falling off in population which will decrease the value of property. Already dozens of homes are being advertised for rent, a condition which has not been known here since the days when the growing popularity of the automobile started the rubber boom.

Pennsylvania Rubber Dividends

Quarterly dividends of 1¾ per cent on the preferred stocks and 1½ per cent on the common stocks, both payable on September 30 to stockholders of record September 15, have been declared by the Pennsylvania Rubber Co., Jeannette, Pa.

Wilson Is With Miller

N. C. Wilson has joined the advertising department of the Miller Rubber Co., Akron, Ohio. He was formerly connected with the Associated Press in Detroit and the Martin V. Kelly Co. at Toledo.

MARKETS

Manufactured Rubber Goods

NEW YORK, September 10, 1918.

Midsummer business conditions still prevail, but their character is somewhat different from that of other years. Wholesalers and retailers are buying and gladly accepting deliveries of late fall and winter goods, whenever possible, many items being very difficult, in some cases impossible, to get. Price no longer seems to be an object with merchants, the main question commonly is to get goods actually into one's possession.

Collections are satisfactory. This is different from the usual case in August, when payments on accounts commonly are not an easy matter.

Manufacturers and merchants are puzzled as to just how business is to be conducted after the new draft goes into effect and thousands more men are pressed into Government service, but all are willing to make the utmost sacrifices to win the war.

The new delivery trucking service, which the railroad administration was to put into operation on August 15, has been postponed, but it is understood that it will become operative on September 15.

The purpose is to expedite transportation by removing at once freight from the terminals and delivering it on the sidewalk of consignee.

Later on, it is said that it is contemplated also to call for shipments at the address of the merchant to prevent much of the congestion that is now being experienced at New York piers and on the railroads.

MECHANICAL GOODS

Manufacturers of mechanical rubber goods, such as are used in great quantities by the Government in war work, are still going strong on Government orders. Some are said to be working approximately 90 per cent capacity on Government orders and even so are not able to bid on all the Government business that is offered. These manufacturers are compelled to give preference to Government business, and at the same time have large orders from wholesalers that they are absolutely unable to fill. Government inspectors are constantly visiting factories to see that orders for normal civilian trade are not filled from goods manufactured for the Government.

The large volume of Government business is also evidenced in the falling off in shipments of goods for domestic use, which now constitute a very small percentage of the output of the factories.

Jobbers are accepting orders on many items subject to stock on hand, prior sale, and war conditions. Orders for immediate delivery are ahead of last year and collections are satisfactory.

TIRES

Business in tires of all kinds has been very active and some manufacturers are said to have disposed of all of their available stocks. Many very large orders have been taken and filled from manufacturers' and jobbers' stocks. Both jobbers and retailers appear to be anxious to secure actual possession of all the tires they can afford to carry and there are even reports of attempts being made to corner available supplies. Manufacturers in many instances are exercising special care to prevent hoarding, which is sure to lead to legislation that might be extended to affect legitimate manufacturers' stocks.

Retail sales in automobile tires have also been unusually heavy in spite of the Government measures restricting the use of automobiles for pleasure purposes. Users fear a shortage of tires and many of them are purchasing to cover their requirements for the next twelve or eighteen months. However, more drastic Government regulations concerning the use of automobiles are expected and may well greatly reduce the actual consumption of tires.

With the expected curtailment in the use of automobiles it is not improbable that the bicycle will grow in popularity, and jobbers in tires and accessories expect a record season in cycle tires next spring and many are preparing for it.

As to the production of automobile tires, great uncertainty prevails. In fact, no one knows what his output will be for the next three months and many complain that no indication of the Government's intentions is given them. It is generally believed, however, that the curtailment in tire production will be made more severe after the sixty days of preliminary curtailment now in force have elapsed. Again, if the use of automobiles is curtailed, as it probably will be, there is little likelihood of an actual shortage of tires. The Government can be expected to prevent artificial shortages.

DRUGGISTS' SUNDRIES

There is little new to be reported concerning rubber sundries. Government and Red Cross orders are absorbing a large percentage of the capacity of the factories and jobbers are accepting orders on many items subject to stock on hand, prior sale, and war conditions. Orders for seasonable goods, which are generally placed at this time of the year for future delivery and subject to dating, with few exceptions, are said to have been eliminated. Most all orders taken now are subject to immediate shipment at prices ruling the day the shipments are made.

Cotton, Yarn and Fabric

NEW YORK, September 9, 1918.

A factor attracting much attention in the raw cotton market at the present time is the proposition of establishing a Government price per pound on the staple, to regulate the market. The report of this plan caused a sharp break in the local market a few days ago, but prices rallied after reports that the Southern representatives in Congress planned to oppose the measure. Further assurance was furnished the cotton trade when, in reply to a protest by W. J. Harris of Atlanta, representing Southern farmers, President Wilson wired: "No cause for concern about the price of cotton. The plan is merely for an impartial inquiry to ascertain whether agreements would be serviceable in stabilizing transactions."

The market, taken as a whole, is in a much firmer position at the time of writing than at the last report. New high records for all future options of cotton were established last week upon publication of the Government crop report, which showed a deterioration of 17.9 points since July 25. The report indicates a yield of 145 pounds per acre, the lowest in the history of the Bureau. The indicated crop is now 11,137,000 bales, the lowest since the poor crop of 1909. Weather reports since the Government report, however, indicate that the condition of the crop is improving somewhat as the result of more favorable weather, and the market is now in a very firm position.

Allotments of cotton for shipment to Great Britain during October have been fixed at 150,000 bales by the British shipping comptroller. This amount is 10,000 bales under the September allotment and was a disappointment to the trade, which had figured on increased shipments, inasmuch as October is usually a month in which export shipments run unusually high.

SEA ISLAND COTTON

A firm condition continues in the market for Sea Island cotton and Sea Island cotton yarns, with prices nominally unchanged save in instances where regulation has been made by the Government. The condition of the growing crop is still reported to be rather poor, with definite figures on the expected yield still lacking.

EGYPTIAN COTTON

Buying of the new Egyptian cotton crop for American consumption is going on under the new rules and regulations established by the Cotton Control Commission, which has undertaken control of this year's crop for the British Government. The shipping situation is still the dominating factor in this market, and shipments are limited by the availability of merchant tonnage.

FABRICS

The enormously increased needs of the Government under the expanded draft law is being reflected in the market for fabrics by the depleted stocks available for civilian trading. The Government is taking 200,000 yards of airplane cotton fabrics monthly, and in addition has called for bids on vast cotton stocks. The following are some of the goods called for: 1,000,000 yards of target cloth, 500,000 yards of woolknap gray blankets;

1,394,000 yards of cheesecloth, and many other articles.

TIRE FABRICS

Dealers in Egyptian and Sea Island tire fabrics are not quoting in the market, as they have no stocks to fill any orders. As a result of this, the market is wholly nominal, with very little trading of any description being done. The demand, however, is still below normal, as the result of the elimination of the manufacture of certain tire sizes.

HOSE AND BELTING FABRICS

Trading in this branch of the market continues fairly active under the scale of maximum prices established by the War Industries Board. The Government continues to take the bulk of the stocks of ducks and are now placing orders for hundreds of thousands of yards of this material. The enormous purchases of the Government are astonishing to the trade, who marvel that such huge stocks are obtainable. The increased army plan will uecessitate the purchase of still larger quantities of ducks, canvas, webbing, etc.

DRILLS, SHEETINGS AND OSNABURGS

Demand for these goods continues fair at the established maximum prices, and a steady routine business is reported by dealers. Supplementary price lists on the various articles are being issued at frequent intervals by the War Industries Board. One of the results of the establishment of official prices has been the willingness of buyers to contract ahead for goods for delivery at any time within a current quarter, as they are insured against market fluctuations. A revision of the price lists is due on October 1st. Among the calls for fabrics issued by the Government is one for 5,000,000 yards of sheeting.

BURLAPS

The market for burlaps has slumped somewhat since the last report, and selling prices have been lowered. This decline, however, is only temporary in the opinion of leading dealers, who point out that selling prices in Calcutta are higher than the prices quoted in the local market, so when present stocks are disposed of material advances are looked for. The present weakness of the local market is reflected in the markets in other Eastern centers, and in the Pacific Coast market.

New York Quotations

TIRE FABRICS

17¼-ounce Sea Island, combed, sq. yd.	Nominal
17¼-ounce Egyptian, combed	Nominal
17¼-ounce Egyptian, carded	Nominal
17¼-ounce Peelers, carded	Nominal
17¼-ounce Peelers, combed	Nominal

DUCKS

Single Filling (pound basis) lb.	.78
Double Filling (pound basis)	.79

DRILLS

37-inch 2.35-yard yd.	.35
37-inch 2.75-yard	.30
37-inch 3.00-yard	.29
37-inch 3.25-yard	.27
37-inch 3.50-yard	.26
37-inch 3.95-yard	.22½
37-inch 2.00-yard Southern lb.	.75
38-inch 2.00-yard Northern	—
40-inch 2.47-yard Northern yd.	.35
40-inch 2.47-yard Northern	—
52-inch 1.90-yard Southern	.40
52-inch 1.90-yard Northern	.40

SHEETINGS

40-inch 2.35-yard yd.	.25
40-inch 2.50-yard	.23¾
40-inch 2.85-yard	.33
40-inch 3.00-yard	.32
40-inch 3.25-yard	.18⅛
40-inch, 3.75-yard	.17⅜
40-inch 3.60-yard	.20
40-inch 4.25-yard	.15½
38-inch Jacket Cloths yd.	

BURLAPS
(Spot Carload Lots)

40-inch 8 -ounce	18.25@——
40-inch 10 -ounce	23.25@——
40-inch 10½-ounce	23.50@——

Chemicals and Compounding Materials

NEW YORK, September 9, 1918.

The market for chemicals and compounding materials has been comparatively quiet during the past two weeks, reflecting the unusual conditions which exist at present in the industrial world. With the rubber consuming industry settled down to a war basis, where all nonessential use of rubber is eliminated, demand from the regular trades has entirely disappeared, although the loss is partly made up by the heavy demand from the larger concerns who are working exclusively on Government orders. Shortage of labor and inadequate supplies of the essential raw materials have acted in most cases as a sustainer of prices, but in some instances they are wholly nominal. In general there have been little alterations from the conditions which have governed the chemical market for a number of weeks past, although the entire situation seems to point to higher values in the future.

ANILINE OIL

The market shows underlying strength generally, with the bulk of the output covered by large contracts. Immediate shipments are quoted at 29@30c. per pound.

ANTIMONY SULPHURETS

While needle antimony has receded from the high prices established two weeks ago and is held now at 13¾@13⅞c., antimony sulphurets have remained steady at 28@30c. for golden, 25@26c. for red and at 45@47c. for the crimson material.

BENZOL

Steady call for the pure, water-white grade has been sufficient to remove the slack from the market, and it is once more apparently on a firm basis, with no pressure to sell noticeable. Prices are unchanged at 25@30c. a gallon.

CAUSTIC SODA

Activity is confined to small transactions. Stocks are not excessive, however, and while the market is dull, it is holding steady generally, though some sellers vary in their prices. There are no offers heard in the spot market from producers, and second hands continue to dominate the situation therefore. Most of the latter are asking on the basis of $4.25 per hundred pounds for solid 76 per cent.

DRY COLORS

There has been little change in this market. Makers are well booked ahead and are behind in their deliveries. The iron blues still hold steady, in spite of the fact that they are very high, but nobody seems willing to sell any under $1.35. Demand for blacks just now comes largely from consumers who have Government contracts to fill.

LITHOPONE

The new prices for the last quarter of the year will be announced soon, and it is certain that there will be an advance. The increasing cost of labor and other items of cost and the advance in the price of barytes will force an advance in price of lithopone from 7½c. to 8½c. It is expected that as soon as the new price is announced there will be a rush to place orders.

LEAD PIGMENTS

There is no change in the situation and the scarcity of the basic lead is holding the market firm. White lead basic carbonate is held at 10@10½c. and basic sulphate is quoted at 9½@9¾c. Government demand is at present dominating the market and the demands of the general trade are not pressing.

OILS

Linseed oil remains firm, but unchanged at $1.90 a gallon. The crushers say that they are not trying to sell any, but that they cannot prevent some business from coming in right along, for some people must have linseed oil even when it commands a high price. Crude corn oil is unchanged at $17.75@$18 per 100 lbs. and the refined grade is holding at $21.47@$21.67 per 100 lbs.

TOLUOL

Government prices and regulations continue to rule all transactions in this market and there are no lots of the commodity being allowed to find their way into the open market for resale. All sales are made under Government release direct from producer to consumer at $1.50@$1.55 per gallon.

Prices Current for Chemicals, Fillers, Colors, etc.

Acetone lb.	*.25½	@	.25¾
Accelerator, in drums lb.	.85	@	1.00
Acids, Acetic, 56% lb.	.11	@	.14
Carbolic, C. P lb.	.44	@	.46
Cresylic, 95% gal.	1.15	@	1.25
Muriatic, 20 deg. lb.	.02¼	@	.02½
Muriatic, 22 deg. lb.	.02¾	@	.03
Nitric, 42 deg. lb.	.09¼	@	.09½
Nitric, 40 deg. lb.	.09	@	.09¼
Sulphuric, 60 deg. ton	18.00	@	25.00
Tartaric, crystals lb.	.93	@	.95
Aluminum Flake ton	28.00	@	30.00
Aniline oil, bulk basis lb.	.27	@	.30
Antimony, metal spot lb.	13.75	@	13.87½
Oxide lb.	15.00	@	16.00
Sulphuret, red lb.	.25	@	.26
Sulphuret, golden lb.	.28	@	.30
Sulphuret, crimson lb.	.45	@	.47
Asbestos ton	35.00	@	45.00
Asphaltum, Egyptian lb.	.20	@	.25
Domestic ton	22.00	@	30.00
Barium sulphate, technical lb.	.04½	@	.05
Sulphide lb.	.07¼	@	.07½
Barytes, prime white imported ton	*40.00	@	45.00
white, domestic ton	32.00	@	35.00
off color domestic ton	22.00	@	23.00
Benzol, pure, bulk gal.	.25	@	.28
Beta-naphthol, sublimed lb.	.85	@	.90
unsublimed lb.	.65	@	.75
Blacks, Drop lb.	.05½	@	.15
Ivory lb.	.16	@	.30
Carbon, gas, cases lb	.16	@	.25
Lampblack, R. M. lb.	.15	@	.45
Mineral blacks ton	35.00	@	45.00
Blues, Prussian lb.	1.35	@	1.50
Soluble lb.	1.40	@	1.60
Ultramarine lb.	.14	@	.50
Browns, Umber, Turkey, burnt, powdered lb.	.05	@	.07
American, burnt lb.	.03½	@	.04
Cadmium sulphide, yellow lb.	2.00	@	2.25
Carbon, bisulphide, bulk lb.	.08½	@	.09
tetrachloride, drums lb.	.30	@	.32
Caustic Soda, 76@78% lb.	.04¼	@	.04½
Chalk, precipitated, extra light lb.	.05	@	.05¾
light lb.	.04¾	@	.05¼
heavy lb.	.03¾	@	.05
China clay, domestic ton	15.00	@	22.50
imported ton	*20.00	@	40.00
Fossil flour lb.	.03¾	@	.05
Gilsonite ton	50.00	@	55.00
Glue, extra white lb	.36	@	.45
medium lb.	.31	@	.35
low grade	.24	@	.27
Glycerine, C. P. (drums) lb.	.61	@	.62
Graphite, flake (bbl.) lb.	.18	@	.20
powdered (bbl.) lb.	.13	@	.15
Green, chrome, R. M lb.	.14	@	.20
Ground glass (fine) lb.	.03½	@	.04
Hexamethylene lb.	1.10	@	1.15
Infusorial earth, powd'd. ton	60.00	@	—
bolted ton	70.00	@	—
Iron oxide, red, reduced grades lb.	.07	@	.08
red, pure, bright lb.	.15	@	.20
Lead, red, dry lb.	.11¼	@	.11½
sublimed lb.	.09¼	@	.09¾
white, basic carb. lb.	.10	@	.10½
white, basic sulp. lb.	.09¼	@	.09¾
Lime flour lb.	.01¾	@	.02
Litharge lb.	.10¾	@	.11¼
English lb.	*.12	@	.13
sublimed lb.	.09¼	@	.09¾
Lithopone, domestic lb.	.07½	@	.08½

Magnesia, carbonate	lb.	.16 @	.17
calcined, heavy	lb.	.11 @	.12
calcined light	lb.	.75 @	.80
Magnesite, calcined, pwd.	ton	50.00 @	65.00
Mica, powdered	lb.	.04¾ @	.05
Mineral rubber (asphaltum base)	ton	80.00 @	115.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.24½ @	—
68 @ 70 degrees (steel bbls.)	gal.	.30½ @	—
70 @ 72 degrees (steel bbls.)	gal.	.31½ @	—
73 @ 76 degrees (steel bbls.)	gal.	.33½ @	—
machine (wood bbls.)	gal.	.42 @	—
Oil corn, crude	cwt.	17.75 @	18.00
corn, refined	cwt.	21.47 @	21.67
linseed (bbls.)	gal.	1.90 @	..
palm, Lagos	lb.	*.39 @	.40
pine, yellow	gal.	.57 @	.59
rapeseed, refined	gal.	1.75 @	1.80
rapeseed, blown	gal.	*1.90 @	2.00
rosin, first rectified	gal.	.69 @	..
tar (commercial)	gal.	.35 @	.36
Orange mineral, American	lb.	.14¼ @	.15¼
imported	lb.	*.15 @	.20
Paraphenylenediamine	lb.	3.75 @	4.00
Petrolatum, bbls., amber	lb.	.06 @	.07
pale yellow	lb.	.06½ @	.07½
Pine tar kiln	bbl.	12.50 @	12.75
Pitch	bbl.	7.50 @	..
Plaster of paris	bbl.	2.00 @	3.00
Red, Tuscan	lb.	.32 @	.40
Indian (reduced)	lb.	.07 @	.09
Standard	lb.	.12 @	.16
Rosin (common to good) @ 280 lbs.	bbl.	12.70 @	..
Rotten stone, powdered	lb.	.02½ @	.04½
Rubber, substitute, black	lb.	.13 @	.17
white	lb.	.15 @	.24
brown	lb.	.20 @	.25
Shellac, fine orange	lb.	.75 @	.80
T. N.	lb.	.67 @	.68
Bleached ordinary	lb.	.65 @	.66
Bleached bonedry	lb.	.70 @	.71
Silex (silica)	ton	22.00 @	40.00
Soapstone, powdered	ton	15.00 @	25.00
Starch, corn, powdered	lb.	4.62 @	4.82
Sulphur, crude	ton	*50.00 @	..
refined, flour, per 100-pounds, in bbls.		3.85 @	4.40
roll		3.70 @	4.15
commercial		3.25 @	3.75
Talc, American	ton	20.00 @	40.00
French	ton	*30.00 @	35.00
Toluol, pure, in drums	gal.	1.50 @	1.55
Tripolite earth	ton	60.00 @	70.00
Turpentine, pure gum—spirits	gal.	.65 @	.66
wood	gal.	.54 @	.57
Venice, artificial	gal.	.12 @	.13
Vermilion, English	lb.	2.00 @	2.10
Wax, beeswax, crude yel.	lb.	.43 @	.44
ceresin, white	lb.	.22 @	.24
carnauba, No. 3	lb.	.76 @	.77
Montan	lb.	*.35 @	.40
ozokerite, black	lb.	*.65 @	.70
ozokerite, green	lb.	*.80 @	.90
Wax, Paraffin, refined, 118/120 M. P. (bbls.)	lb.	.12¾ @	.13
Paraffin, 123/125 M. P.	lb.	.13 @	.13¼
128/130 M.P.	lb.	.13⅞ @	.14¼
133/136 M.P.	lb.	.15 @	.15½
Crude, 120/122 M.P.	lb.	.10 @	.10¼
124/126 M.P.	lb.	.10½ @	.11
Whiting, commercial	cwt.	1.25 @	—
Alba	cwt.	1.25 @	—
Whiting, Paris, white, American	cwt.	1.50 @	1.75
English cliffstone	cwt.	1.75 @	2.75
Yellow chrome	lb.	.30 @	.35
Zinc oxide, States Brand		.10 @	—
horsehead brand	lb.	†.10¼ @	.10½
selected	lb.	†.10¾ @	.11
"XX red"	lb.	†.10¼ @	.12
French process, green seal	lb.	†.13½ @	.14¼
red seal	lb.	†.13 @	.14½
white seal	lb.	†.14 @	.14¾
Zinc substitutes	ton	35.00 @	40.00
Zinc, sulphide, pure	lb.	.06 @	.07

*Nominal. †Contract prices.

Crude Rubber

NEW YORK, September 9, 1918.

The market for crude rubber under the conservation policy of the Government was moving in a routine way during the past two weeks and business has adjusted itself to a strictly war basis. Some more free rubber has been offered by manufacturers who had to curtail their activities in accordance with the regulations of the War Industries Board, and slight concessions from the maximum prices had to be granted. This shading of fixed prices was expected, as quotations for future shipments are materially lower under offerings from the Far East. The situation at Singapore is still very weak, but the expected regulations of the British Government has so far not materialized. As the present restrictions on imports are running off by the end of the current month, the trade is expecting to hear soon which course the Government is going to follow after October 1. There is no question that the Government will allow the import of a sufficient tonnage of rubber needed for the manufacture of fall war essentials. The manufacture of pneumatics will in all probability be cut down to 30 per cent of last year's output, and the use of rubber for the other non-essential industries will entirely be eliminated. This seems to be in accordance with the program laid down at the last rubber conference, and the committee on rubber is presently working up the statistical material to ascertain the needed tonnage.

With Para rubber favored to the extent of 50 per cent of all allocated imports, this grade is consequently much firmer than the Plantation grades, and the difference between maximum and shipment prices is much smaller in the Brazilians than in the Ceylons. Prices, though, have experienced no change during the past two weeks and the price schedule below is not disturbed.

		Spot.	Sept.-Oct.	Nov.-Dec.
Para—Up-river fine	lb.	68	61	..
Up-river medium		63	54	..
Up-river coarse		40	32	..
Caucho ball		40	32	..
Islands fine		59	54	..
Islands coarse		27	26	..
Cameta		28	27	..
Madeira fine		69	..	..
Ceylons-smoked sheets, ribbed		62	62	35
Smoked sheets, plain		60	60	33
First latex pale crepe		63	63	37
Amber crepe		60	60	36
Clean brown crepe		58	58	32
Centrals—Corinto, prime		39	37	..
Esmeralda, prime		39	37	..
Mexican scrap		35	35	..
Balata sheets		97	..	..
Balata, block Panama		59	..	..
Guayule		35	35	..
Africans—Rio Nunez, string		55	..	..
Massai, red		55	..	..
East Indian Pontianak		15	..	..
Palembang		16	..	..

* Nominal.

Scrap Rubber

NEW YORK, Sept. 9, 1918.

The scrap rubber market remains very firm, though practically no business is being done; this dullness having created no general tendency to make concessions. However, it appears that prices are easing gradually but that no break is likely to occur, due to the fact that scrap rubber dealers are active in other fields in which they have realized considerable profit.

Prices for boots and shoes are nominally unchanged, and nothing new has occurred in the scrap tire situation, except that there are rumors that some of the tire manufacturers that have been hardest hit by the restriction of the output of new tires are buying up old tires of good makes and still repairable for rebuilding purposes. There appears to be no interest at all in inner tubes. Quotations in mechanicals are largely nominal.

The following prices have been quoted for scrap f. o. b. the reclaiming mill:

Boots and shoes	8¾ @	9
Arctics, trimmed	6⅛ @	6½
Arctics, untrimmed	5¼ @	5½
Tires—Automobile	5¼ @	5½
Bicycles, pneumatic	5 @	5⅛
Mixed hose	2 @	2⅛
Air brake	5¾ @	6
Inner tubes, No. 1	21⅛ @	22¼
Inner tubes, No. 2	11 @	11¼
Inner tubes, red	11 @	11¼

Golf Tournament in Trenton

As previously announced, the Second Annual Golf Tournament of The Rubber Association of America, Inc., will be held at the Trenton Country Club, Trenton, N. J., on Wednesday, September 25, and it is hoped that there will be a large attendance from the membership of the Association.

Those who were at the tournament at Trenton last year all remember with pleasure the cordial welcome and fine entertainment given by the members of the Trenton Rubber Manufacturers' Association. It will also be recalled that they put up for competition a handsome silver cup as a trophy to be won three times in order to be kept permanently by the winner. The competition was designed to be intersectional, and the four or eight best scores from each section were to decide the winner at each tournament. The four sections of the rubber industry were represented last year, namely, Akron, New England, New York, and Trenton. Trenton won the cup and it will be competed for again this year. It is thus hoped that there will be large representations from New England, New York, and Akron in the effort to wrest the trophy from Trenton. The Rubber Association of America will donate prizes for the two best gross scores and also for the two best net scores.

Tennis courts will be provided for those who desire to play tennis instead of golf.

Those who do not desire to play golf or tennis, but can plan to attend and enjoy the other features being arranged by the Outing Committee of the Rubber Association, are requested to write the secretary, Harry S. Vorhis, to that effect. Members are cordially invited to bring guests with them.

The price of tickets, including buffet lunch, dinner and use of golf or tennis courts will be $10, and the surplus over and above the actual expenses of the tournament will be distributed equally between the American Red Cross, Knights of Columbus, and the Y. M. C. A. war relief funds.

Golf entry and notice of attendance cards have been sent out to members of the Rubber Association, and in returning those members who expect to attend should accompany them with checks made payable to the Rubber Association of America, Inc.

The tournament (eighteen holes medal play) will begin at 10 o'clock a. m., and those who expect to enter may start from that hour up to 1:30 o'clock p. m., after which time there will be no more starters.

For the convenience of those going to Trenton from New York and points East advice is given that trains leave the Pennsylvania Station, New York, for Trenton as follows:

8.08 8.20 9.00 9.20 10.00 10.12 11.00 A.M.
Arriving at Trenton at
9.31 9.58 10.14 10.58 11.14 11.32 12.14

Dinner will be served at the Trenton Country Club at 6 o'clock p. m. sharp, in order that it may be possible for the guests to return to their homes on early evening trains.

Express trains leave Trenton for New York at:

7.47 8.48 9.45 11.01 P. M.
Arriving at New York at
9.18 10.15 11.00 12.50

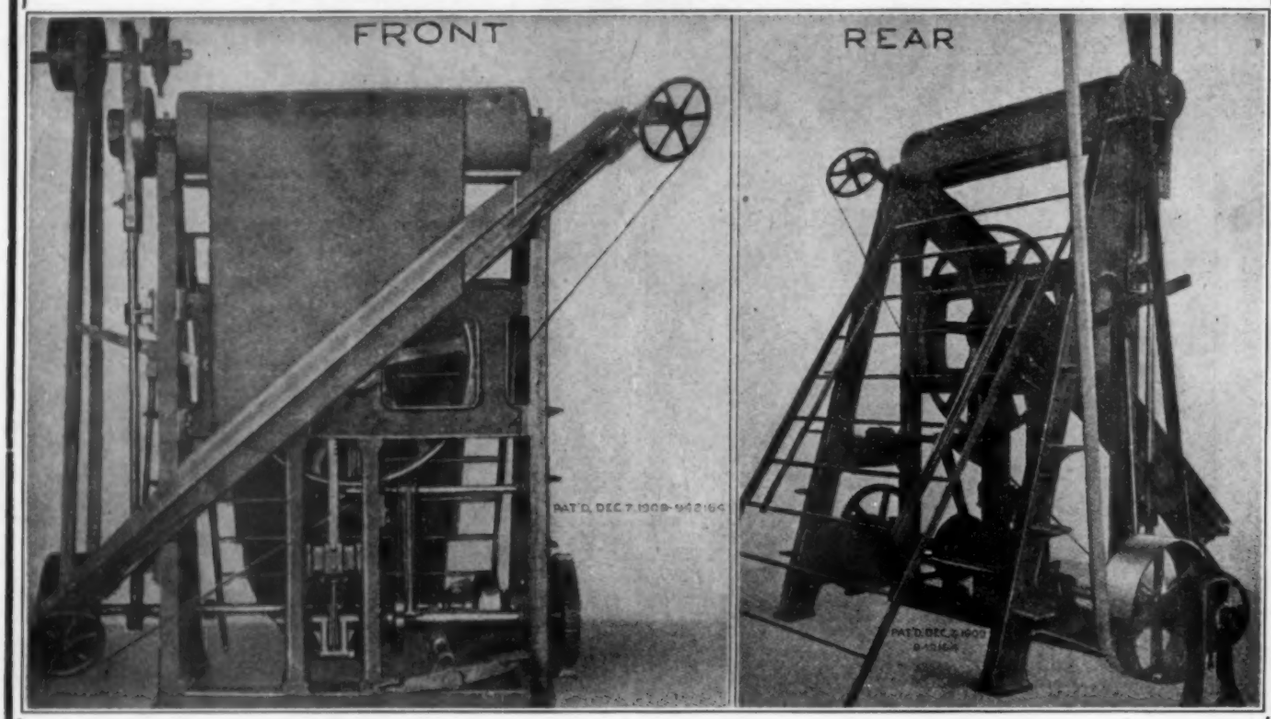
United States Rubber Company

1790 Broadway
New York

The Largest Rubber Manufacturers in the World

An Improved Machine for Cutting Cloth on the Bias

Patented by Andrew C. Bolton
December 7th, 1909 **No. 942164**



Front View **Back View**

This machine has many advantages over any other now in the market for cutting frictioned cloth on the bias, a few of which are, accuracy in cutting, simplicity and lightness of construction, quickness in adjustment, occupying but a very small floor space, and can be operated at a practically nominal cost, and may be technically described as an upright bias cutter.

It will cut fabric of any width and on any angle.

A practical and unique feature about this cutting device is, that the knife can instantly be changed to cut on any angle from a horizontal or at a right angle to the length of the material to an angle of sixty (60) degrees, without the adjustment of any other part of the machine.

Patented all over the world. If interested please send for descriptive pamphlet and further information to the

Spadone Machine Co., Inc.

126-8 DUANE STREET **NEW YORK**

PURE NATURAL GAS
CARBON BLACK

REFINED PURE PINE TARS AND TAR OILS, ROSIN OILS, PARAFFINE WAXES, PINE PITCHES, ROSIN, TURPENTINE, VENICE TURPENTINE, BURGUNDY PITCH, GUM THUS, CRUDE TURPENTINE.

Synthol-Linseed Oil's Only Rival

H. T. West Company, Inc.

148 State Street Boston, Mass.

HODGMAN RUBBER COMPANY HR CO TUCKAHOE, N.Y. EST'D 1838

Rubber Sundries of all kinds for druggists, hospitals, homes, stationers, sportsmen and others.

A complete line of mackintoshes, rubber surface clothing, leggins, hats, etc., for every requirement.

Hodgman long grain, rubber auto top material in one and two plies; coated cloth for manufacturing purposes.

The above—featuring highest quality in materials and workmanship—are priced consistently right.

Descriptive literature and prices will be gladly sent.

HODGMAN

TUCKAHOE NEW YORK

Seamless Rubber Company

INCORPORATED

NEW HAVEN, CONNECTICUT

Manufacturers of

MEDICAL, HOSPITAL RUBBER GOODS FOR THE DRUGGIST, SURGICAL AND HOSPITAL TRADE. INCLUDING MADE-RITE AND SEAMLESS SUCCESS SERIES BRAND. ORIGINAL PATENTEES OF SEAMLESS NIPPLES.

Write for price list

MAIN OFFICE *and* FACTORY

NEW HAVEN, CONNECTICUT

H&G H&G

RUBBER MAKERS' CHEMICALS

H&G H&G

THE HARSHAW FULLER AND GOODWIN CO.

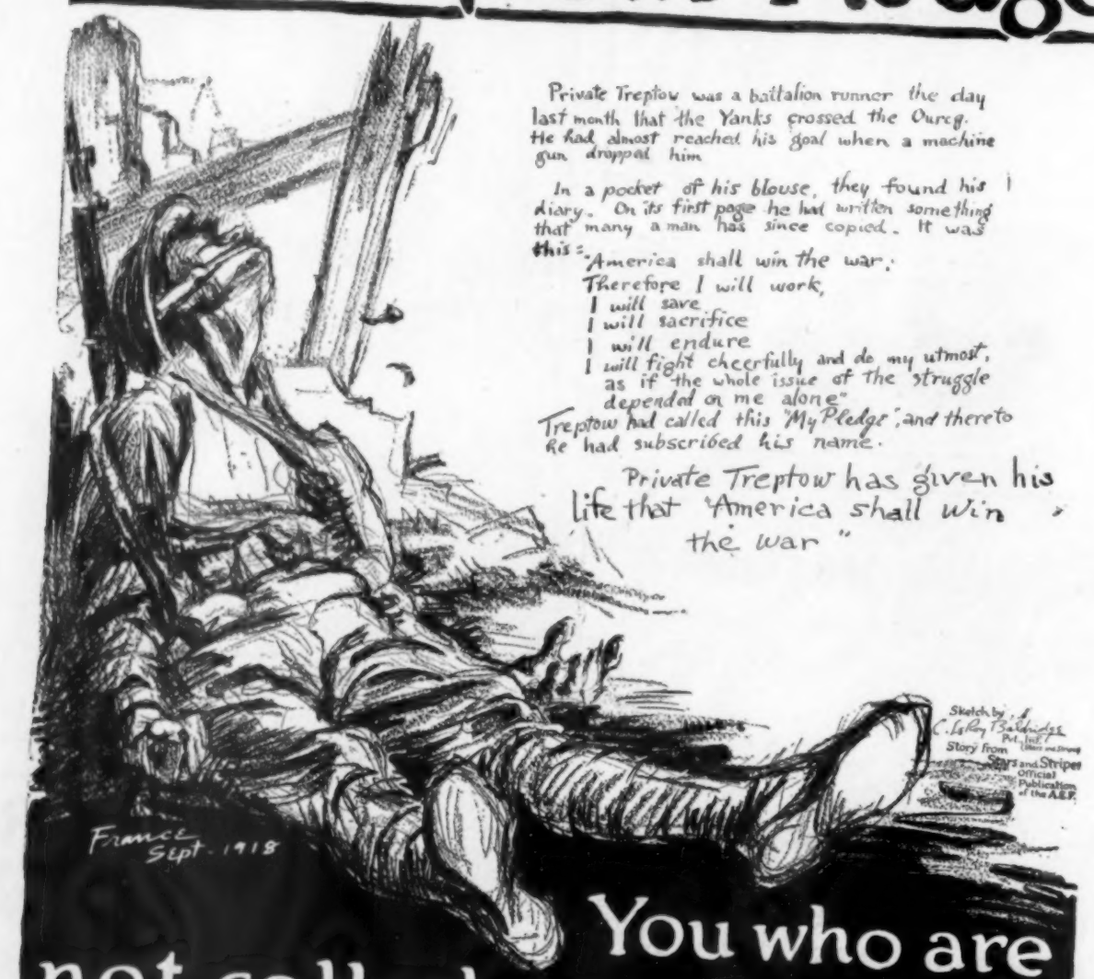
CLEVELAND NEW YORK PHILADELPHIA

H&G H&G

STRAIGHT FROM THE TRENCHES, NO. 7

One of a series of advertisements specially originated and produced for the Liberty Loan Committee entirely by members of the American Expeditionary Force

Pvt. Treptow's Pledge


Private Treptow was a battalion runner the day last month that the Yanks crossed the Ourcq. He had almost reached his goal when a machine gun dropped him.
In a pocket of his blouse, they found his diary. On its first page he had written something that many a man has since copied. It was this:
"America shall win the war.
Therefore I will work,
I will save
I will sacrifice
I will endure
I will fight cheerfully and do my utmost, as if the whole issue of the struggle depended on me alone."
Treptow had called this "My Pledge", and thereto he had subscribed his name.
Private Treptow has given his life that "America shall win the war"
Sketch by
Story from Stars and Stripes Official Publication of the A.E.F.
France Sept. 1918

You who are not called upon to die-

Subscribe to

the Fourth Liberty Loan

STRAIGHT FROM THE TRENCHES, NO. 8

One of a series of advertisements specially originated and produced for the Liberty Loan Committee entirely by members of the American Expeditionary Force

If you want to keep us feeling this way-

Fourth Liberty Loan

MAGNESIA

DOUBLE CALCINED HEAVY
MEDIUM LIGHT CALCINED
LIGHT CALCINED
EXTRA LIGHT CALCINED
CARBONATE

Specially adapted for the Rubber Trade

GENERAL MAGNESITE
& MAGNESIA CO.
PHILADELPHIA